



HAZARDOUS WASTE MANAGEMENT GUIDE

This pamphlet provides guidance for managing hazardous waste at Air Force installations to meet Federal, state, interstate, Department of Defense (DoD), Air Force, and local environmental, worker safety, and transportation requirements. It helps major commands (MAJCOM) implement AFI 32-7042, *Solid and Hazardous Waste Compliance*. MAJCOMs may adopt all or portions of this guidance in order to meet the requirements of this AFI. Additionally, this guide assists in developing basic training requirements for hazardous waste management for personnel at Air Force installations and their tenants, including Air Force Reserve and Air National Guard units and members. This pamphlet applies to the Air National Guard except as modified by supplemental instructions developed to meet the unique requirements of the Guard. This pamphlet is not intended for direct use by installations in foreign countries, but sections could be adopted to provide guidance for Air Force activities at those locations.

Paragraph

Chapter 1--Introduction

Purpose.....	1.1
Background	1.2
Objectives	1.3
Guide Layout	1.4

Chapter 2--Overview of Hazardous Waste Regulations and Responsibilities

Background of Hazardous Waste Regulations and Responsibilities.....	2.1
Resource Conservation and Recovery Act (RCRA)	2.2
Other Applicable Federal Laws and Regulations	2.3
DoD Directives and Air Force Policies	2.4
State Regulations	2.5
Local Regulations	2.6
Roles and Responsibilities.....	2.7

Chapter 3--Hazardous Waste Generation (Determination and Characterization)

Overview	3.1
Hazardous Waste Regulatory Process	3.2
Air Force Characterization Process	3.3
Identification Substep.....	3.4
Description Substep	3.5
Quantification Substep.....	3.6
Documentation.....	3.7
Work Information Management System - Environmental Subsystem (WIMS-ES).....	3.8

Chapter 4--Hazardous Waste Storage (Container Management, Generator Classification, and Accumulation Management)

Overview	4.1
----------------	-----

Paragraph

Container Management.....	4.2
Tank Management.....	4.3
Generator Classification.....	4.4
Accumulation Management	4.5
TSDF Documentation Requirements	4.6
Chapter 5--Hazardous Waste Disposal (Turn-In, Transport, and Disposal)	
Overview	5.1
Turn-in	5.2
Transportation	5.3
TSDF Selection.....	5.4
Forecasting Waste Disposal Requirements	5.5
Transportation and Disposal Documentation.....	5.6
Air Force Documentation Requirements.....	5.7
Chapter 6--Emergency Procedures and Prevention	
Overview	6.1
Preparedness Requirements.....	6.2
Response Requirements.....	6.3
Incorporation of Requirements into Installation's HAZMAT Plan	6.4
Emergency Coordinator Responsibilities	6.5
Toxic Chemical Release Reporting (EPA Form R)	6.6
Release Reporting and Emergency Notification (Incident Report).....	6.7
Chapter 7--Personnel Safety	
Overview	7.1
Typical Hazards and Harms	7.2
How to Protect Yourself and Fellow Co-Workers	7.3
Safe Working Procedures	7.4
Additional Sources of Information	7.5
Applicable AFOSH Standards.....	7.6
Chapter 8--Training	
Overview	8.1
Personnel Requiring Training	8.2
Training Frequency.....	8.3
Who Conducts Training.....	8.4
Air Force Training Programs	8.5
Customizing Training	8.6
Hazard Communication Training.....	8.7
Training Documentation	8.8
Chapter 9--Waste Minimization	
Overview	9.1
Air Force Pollution Prevention Program.....	9.2
Waste Minimization Hierarchy	9.3
Team Approach	9.4
Benefits of Pollution Prevention	9.5
Pollution Prevention Regulatory Requirements.....	9.6
Meeting Pollution Prevention Goals	9.7
Quarterly Summaries	9.8
Chapter 10--Hazardous Waste Management Plan	
Overview	10.1
Hazardous Waste Management Plan Elements	10.2

Page

Figures

1.1. Cradle-to-Grave Hazardous Waste Life-Cycle Management Process.....	5
3.1. Generation Phase of Hazardous Waste Life-Cycle Management Process.....	11
3.2. Hazardous Waste Profile Sheet (Front.....	18
3.3. Hazardous Waste Profile Sheet (Back.....	19
4.1. Storage Phase of Hazardous Waste Life-Cycle.....	36
4.2. Accumulation Site Log and Instructions.....	42
5.1. Disposal Phase of Hazardous Waste Life-Cycle.....	55
5.2. Sample Air Force Form 2005, Issue/Turn-In Request.....	61
5.3. Sample DD Form 1348-1, DoD Single Line Item Release/Receipt Document.....	63
5.4. Required EPA Marking for Containers of 110 Gallons or Less.....	65
5.5. Sample of Preprinted Marking Which Can Be Used to Meet EPA/DOT Requirements.....	65
5.6. Sample PCB Marking.....	66
5.7. Sample Uniform Hazardous Waste Manifest.....	68
5.8. Sample Uniform Hazardous Waste Manifest Continuation Sheet.....	69

Tables

2.1. Overview of RCRA.....	7
2.2. Federal Laws and Their Impact on Air Force Installations.....	8
3.1. RCRA Specifications for Used Oil Burned for Energy Recovery.....	15
3.2. Hazardous Waste Profile Sheet Instructions.....	20
3.3. Determination of Treatment Standards.....	24
3.4. Land Disposal Restrictions Subcategories for Characteristic Wastes.....	25
3.5. Hazardous Waste Stream Inventory and Instructions.....	26
3.6. Hazardous Waste Process Codes.....	28
3.7. EPA Priority Pollutants.....	29
3.8. Typical Wastes Generated at Air Force Installations.....	30
4.1. Sample Hazardous Materials Table and Column Explanation.....	37
4.2. Performance-Oriented Packaging Codes for Non-Bulk Packaging.....	38
5.1. Proper Shipping Description Guidelines.....	56
5.2. AF Form 2005, Issue/Turn-In Request Instructions.....	62
5.3. DD Form 1348-1, Disposal Turn-In Document Instructions.....	64
5.4. Placarding Requirements for Table 1 Hazardous Materials.....	66
5.5. Placarding Requirements for Table 2 Hazardous Materials.....	67
5.6. Hazardous Waste Manifest Instructions.....	70
5.7. Hazardous Waste Manifest (Continuation Sheet) Instructions.....	74
5.8. RCRA Records and Corresponding Minimum Retention Periods.....	75
8.1. Hazardous Waste Training Requirements.....	89
8.2. Hazardous Waste Training Matrix.....	91
9.1. Waste Minimization/Management Options Hierarchy.....	94
10.1. Information and Emergency Contacts.....	95

Attachments

1. Glossary of References, Abbreviations, Acronyms, and Terms.....	98
2. Sample Hazardous Waste Management Plan.....	103

Chapter 1**INTRODUCTION**

1.1. Purpose. This guide aids installation personnel managing hazardous waste by identifying the Federal and Air Force requirements, and providing guidance and procedures to meet them. The Hazardous Waste Management Guide (the Guide) does not apply to

radioactive wastes and the corresponding regulatory policies.

1.2. Background. Within typical Air Force installations, there are a diverse number of materials and procedures

which result in or generate hazardous wastes streams. Once generated, the hazardous waste must be accumulated or stored in appropriate containers or tanks. Within prescribed time limits, the hazardous waste is turned in and transported to an Environmental Protection Agency (EPA) approved facility for treatment, storage, recycling, or disposal. Hazardous waste management involves many personnel throughout an installation, including generating activities and handlers, personnel with oversight responsibilities, accumulation point and site managers, permitted storage facility managers, emergency responders, bioenvironmental engineering services, and the environmental manager.

1.2.1. Life-Cycle of Hazardous Waste. As seen in figure 1.1, the hazardous waste life-cycle process consists of three phases: Generation, Storage, and Disposal. To help manage hazardous waste as it passes through the three phases, the guide identifies seven process steps (hazardous waste characterization, container/tank management, generator classification, accumulation management, turn-in, transportation, and disposal) and six requirements that affect the entire hazardous waste life-cycle (waste minimization, recordkeeping and reporting, emergency procedures and prevention, personnel safety, training, and the hazardous waste management plan).

1.2.2. Importance of Hazardous Waste Management. There are serious legal and environmental impacts associated with deficient or insufficient hazardous waste management. Legal impacts are straightforward, specified by the numerous regulations and legislation, resulting in both criminal and civil penalties. Environmental impacts associated with hazardous waste mismanagement are of a different nature, they extend beyond the individual to society.

Historically, the impacts on the environment, from even small accidental releases, have shown to be detrimental to both human health and the environment.

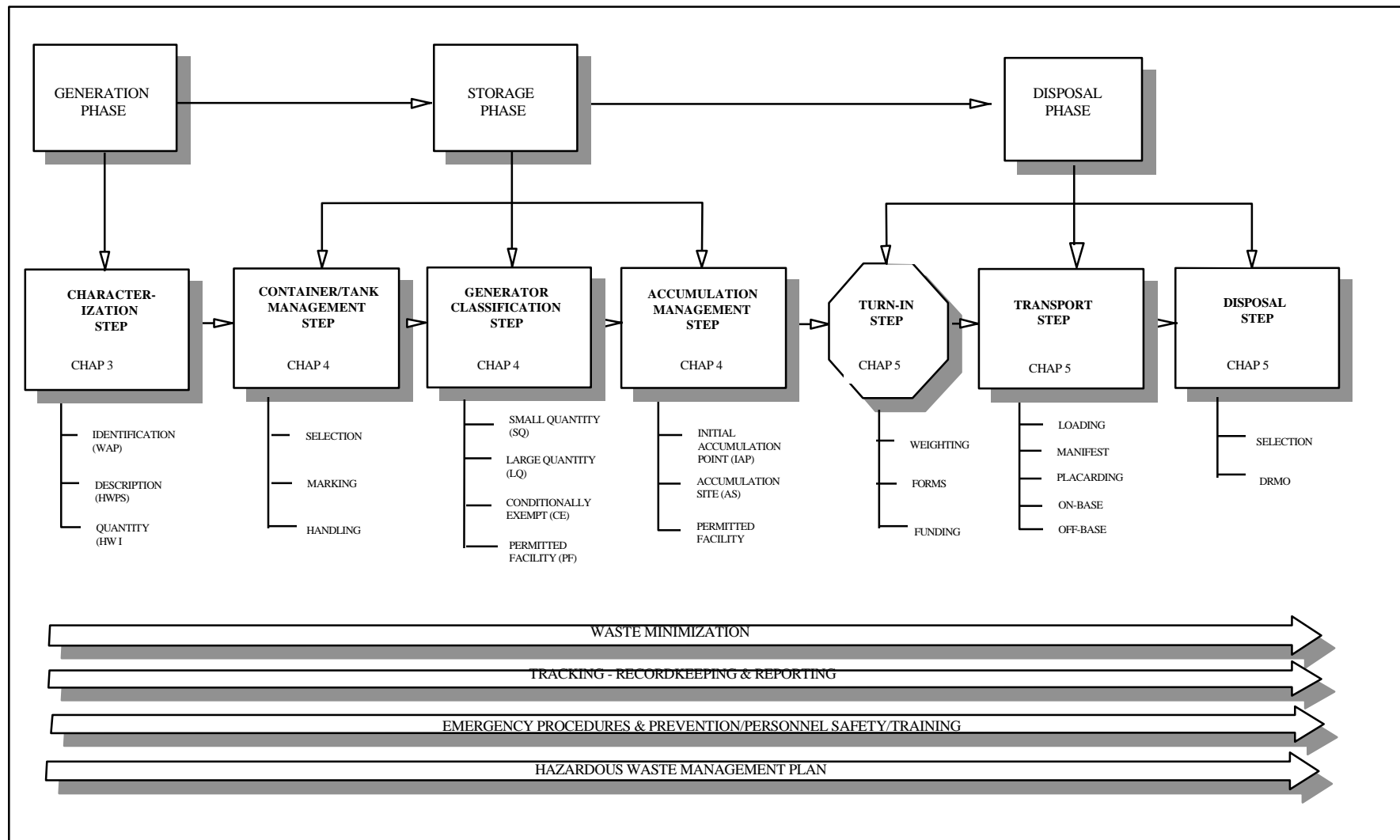
1.2.3. Importance of Pollution Prevention. Reducing hazardous waste should be an underlying concept throughout the hazardous waste management process. Further information on pollution prevention and waste minimization is provided in chapter 9 of the guide.

1.3. Objectives. This Guide provides the user with a broad understanding of the regulations, processes, and procedure associated with cradle-to-grave hazardous waste management and outlines the requirements for developing a hazardous waste management plan.

1.4. Guide Layout. The Guide is structured in a straightforward manner. Chapters 1 and 2 outline background information. Chapters 3 through 10 follow the hazardous waste life-cycle management process shown in figure 1.1. These chapters identify the procedural requirements associated with hazardous waste management throughout the life-cycle process. If users are unfamiliar with any of the terms or acronyms, they should refer to attachment 1 for clarification. Attachment 2 provides an example of a hazardous waste management plan and a waste analysis plan.

1.4.1. Federal Requirements. Most procedural chapters conclude with a tabular summary of the pertinent Federal requirements discussed in that chapter. The summary includes the required element and corresponding CFR citation, for convenient user reference.

Figure 1.1. Cradle-to-Grave Hazardous Waste Life-Cycle Management Process.



Chapter 2

OVERVIEW OF HAZARDOUS WASTE REGULATIONS AND RESPONSIBILITIES

2.1. Background of Hazardous Waste Regulations and Responsibilities. Regulation of hazardous waste management evolved primarily from amendments to the Solid Waste Disposal Act (SWDA), passed in 1965 to focus on municipal waste disposal practices at sites such as dumps and landfills. Before enactment of the Resource Conservation and Recovery Act (RCRA) in 1976, there were few Federal laws or standards regulating the management of hazardous waste. Regulation of these materials was primarily left up to the state and local governments. The 1984 passage of the Hazardous and Solid Waste Amendments (HSWA) of RCRA established the current framework for hazardous waste management requirements.

2.2. Resource Conservation and Recovery Act (RCRA). RCRA directs the EPA to establish and enforce regulations for the management of hazardous waste. Federal regulations are promulgated through the *Federal Register* and compiled annually into the Code of Federal Regulations (CFR). Regulations define how a law or statute's broad policy directives are to be implemented. RCRA requirements are found in 40 CFR Parts 240 through 280. RCRA, as amended by Hazardous and Solid Waste Amendments, consists of 10 Subtitles, A through J (see table 2.1). Subtitle C is the RCRA section pertinent to hazardous waste. The Staff Judge Advocate maintains the most current versions of each of these regulations. Specific RCRA requirements are discussed in the following chapters. Failure to comply can potentially result in criminal and civil penalties. Therefore, knowledge of all hazardous waste requirements is crucial to successful hazardous waste management.

2.3. Other Applicable Federal Laws and Regulations. Although RCRA is the primary regulation guiding Air Force hazardous waste management practices, other legislation and regulations impact hazardous waste management (see table 2.2). The impact of these laws on an installation varies depending on the types of waste produced, as well as the media (land, water, or air) into

which the wastes can be released.

2.3.1. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). CERCLA regulates all hazardous substances; it was established in 1980 to clean up inactive, abandoned sites and enact emergency response procedures for hazardous substance spills.

2.3.2. Federal Facility Compliance Act (FFCA). The most recent RCRA amendment, the FFCA, extends the waiver of the Federal Government's sovereign immunity relative to the provisions of RCRA Subtitle C. FFCA establishes requirements for Federal facilities to comply with all Federal, state, interstate, and local solid waste regulations respecting hazardous waste disposal and management in the same manner as private facilities. It allows state and Federal agencies to assess Federal facilities with fines for RCRA violations. Additionally, FFCA requires that each permitted treatment, storage, and disposal facility (TSDF) operated by the Federal government receive an annual compliance inspection by EPA.

2.4. DoD Directives and Air Force Policies. The following DoD directives establish hazardous waste requirements: DoD 4160.21-M, *Defense Reutilization and Marketing Manual*, March 1990 with change 1; DoDD 5100.50, *Protection and Enhancement of Environmental Quality*, May 24, 1973 with changes 1 and 2; and DoDD 6050.8, *Storage and Disposal of Non-DoD-Owned Hazardous or Toxic Materials on DoD Installations*, February 27, 1986. Air Force requirements include AFPD 32-70, *Environmental Quality*; AFI 32-7042, *Solid and Hazardous Waste Compliance*; AFI 32-7045, *Environmental Compliance Assessment and Management Program*; AFI 32-7001 *Environmental Budgeting*; AFI 32-7080, *Pollution Prevention Program*; AFI 32-4002, *Hazardous Materials Emergency Planning and Response Compliance*; and AFI 48-119, *Medical Service Environmental Quality Programs*. Another related publication is DRMS-M 6050.1, *Environmental Compliance for the DRMS Hazardous Property Program*.

Table 2.1. Overview of RCRA.

RCRA SUBTITLE	Section Number	SUBJECT	40 CFR Part
A	1004	GENERAL PROVISIONS Definition	260
B	OFFICE OF SOLID WASTE MANAGEMENT		
C		HAZARDOUS WASTE MANAGEMENT	
	3001	Identification & Listing of Hazardous Waste	261
	3002	Generators of Hazardous Waste	262
	3003	Transporters of Hazardous Waste	263
	3004	Owners and Operators of TSDF	264-268
	3005	Permits for TSDF	270 and 124
	3006	Authorized State Programs	271
	3007	Inspections	260
	3014	Regulation of Used Oil	279
	3017	Export of Hazardous Waste	262
	3020	Hazardous Waste Injection	267
D	STATE OR REGIONAL SOLID WASTE PLANS		
E	DUTIES OF SECRETARY OF COMMERCE IN RESOURCE RECOVERY		
F	FEDERAL RESPONSIBILITIES		
G	MISCELLANEOUS PROVISIONS		
H	RESEARCH DEVELOPMENT, DEMONSTRATIONS AND INFORMATION		
I	UNDERGROUND STORAGE TANKS (UST)		
J	MEDICAL WASTE		

2.5. State Regulations. States may be authorized by the EPA to implement the RCRA program. To be approved, the state program must meet conditions of consistency, enforceability, and public hearing requirements. A state may implement additional requirements, which must be at least as stringent as Federal requirements and can be more stringent.

2.6. Local Regulations. Local governments can also implement regulations impacting hazardous waste management. Each installation must ensure all applicable local requirements are identified and followed.

2.7. Roles and Responsibilities. The responsibilities associated with hazardous waste management extend to many personnel and activities (**including all contractors**) on an installation. This section outlines major roles and responsibilities.

2.7.1. Installation Commander. The Installation Commander is ultimately responsible for hazardous waste management and compliance. Responsibilities include ensuring the following activities are met:

2.7.1.1. Hazardous waste management is given a top priority and is emphasized to all base personnel.

2.7.1.2. All hazardous waste permits and manifests are signed.

2.7.1.3. Enforcement actions (if received) are quickly attended to.

2.7.1.4. A hazardous waste management plan is created and in place.

2.7.1.5. All personnel involved with hazardous waste have the required training and receive refresher training.

2.7.2. Environmental Protection Committee. The environmental protection committee is the primary vehicle available to the installation commander to oversee compliance with hazardous waste disposal requirements. The environmental protection committee reviews and coordinates the hazardous waste management program.

2.7.3. Base Environmental Flight. The base environmental flight, supervised by the environmental manager, is the installation commander's organization for ensuring the hazardous waste management process is in compliance with all Federal, state, interstate, and local environmental requirements. Responsibilities include:

Table 2.2. Federal Laws and Their Impact on Air Force Installations.

LAW	POTENTIAL IMPACTS TO AIR FORCE INSTALLATIONS
Hazardous Materials Transportation Act (HMTA)	Outlines requirements for the transportation of Hazardous Waste.
Toxic Substances Control Act (TSCA)	Regulates management of PCBs and other toxic wastes.
Occupational Safety and Health Act (OSHA)	Regulates work safety, emergency response, clean up, and training requirements.
Clean Air Act (CAA)	Regulates air emissions from RCRA TSDFs and incinerators. Hazardous sludge from CAA-permitted scrubbers must comply with RCRA if it is a listed or characteristic hazardous waste.
Federal Facility Compliance Act (FFCA)	Waives sovereign immunity for penalties under RCRA. Allows EPA and the states to impose fines for non-compliance.
Emergency Planning and Community Right-to-Know Act (EPCRA)	Outlines requirements for emergency planning, notification, response, working with the local community, and reporting.
Pollution Prevention Act (PPA)	Outlines principles guiding waste management practices.
Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)	Regulates cleanup of past wastes.

2.7.3.1. Acting as the liaison office for environmental compliance issues with regulatory agencies;

2.7.3.2. Providing technical expertise with regard to hazardous waste labeling, storage, disposal, and recordkeeping;

2.7.3.3. Conducting required documentation training;

2.7.3.4. Completing land disposal restriction information on the hazardous waste profile sheet and manifest;

2.7.3.5. Ensuring accurate hazardous waste weighing for turn-in and disposal in the presence of an authorized DoD representative;

2.7.3.6. Certifying DD Form 1348-1, DoD Single Line Item Release/Receipt Document;

2.7.3.7. Identifying installation personnel authorized to carry turn-in and disposal documents;

2.7.3.8. Completing and signing the hazardous waste manifest when the designee of the installation commander;

2.7.3.9. Overseeing proper programming and record-keeping procedures (disposal funding and future requirements including waste analysis);

2.7.3.10. Developing the installation hazardous waste management plan;

2.7.3.11. Prepare and modify permits;

2.7.3.12. Maintaining all records in the WIMS-ES hazardous waste module;

2.7.3.13. Maintaining a hazardous waste file which contains as a minimum copies of hazardous waste profile sheets, DD Forms 1348-1, manifests, M-15 report, waste stream inventory, and hazardous waste management plan;

2.7.3.14. Prepare biennial and other applicable state inventories;

2.7.3.15. Developing and submitting 5-year budget request for facilities, personnel, training, waste disposal, etc.; and

2.7.3.16. Ensuring proper disposal of all hazardous waste from their installation.

2.7.4. Bioenvironmental Engineering Services. Responsibilities include the following:

2.7.4.1. Completing the health related sections of the hazardous waste profile sheet;

2.7.4.2. Evaluating industrial processes to properly characterize installation waste streams;

2.7.4.3. Identifying analytical, training and equipment requirements to the environmental flight for base funding of all these requirements;

2.7.4.4. Developing hazardous waste analysis plans and forwarding a copy to the environmental flight for inclusion in the hazardous waste management plan;

2.7.4.5. Developing hazardous waste stream inventories;

2.7.4.6. Reviewing plans to build or modify facilities used to treat, store, or dispose of hazardous waste, including all proposals to establish or relocate accumulation points;

2.7.4.7. Performing technical reviews of locally developed hazardous waste analysis contracts;

2.7.4.8. Collecting, preparing, and arranging for the transport of samples for waste stream analysis;

2.7.4.9. Maintaining a copy of each hazardous waste profile sheet in the generating activities' shop folder;

2.7.4.10. Including in annual workplace evaluations an evaluation of compliance with RCRA and waste minimization activities; and

2.7.4.11. Conducting health risk assessments at waste accumulation sites and during spill response.

2.7.5. Generating Activity. Responsibilities include the following:

2.7.5.1. Ensuring all wastes are properly characterized when newly generated and when waste streams have changed;

2.7.5.2. Managing all initial accumulation points in accordance with the base hazardous waste management plan;

2.7.5.3. Notifying the environmental flight of all changes in hazardous waste activities including waste stream process modifications, relocation of initial accumulations points, and names of newly assigned shop monitors;

2.7.5.4. Completing all required disposal documents (hazardous waste profile sheet, AF Form 2005, Issue/Turn-In Request, and DD Form 1348-1);

2.7.5.5. Maintaining a hazardous waste file, which contains as a minimum copies of each hazardous waste profile sheet, waste analyses results, AF Form 2005, DD Form 1348-1s, and manifests;

2.7.5.6. Ensuring hazardous waste is properly characterized, segregated, marked, labeled, weighed, stored, packaged, and transferred for disposal; and

2.7.5.7. Consulting with the environmental manager, bioenvironmental engineering services, and HAZMAT Planning Team before any hazardous waste disposal process or activity is modified, or a new process or activity is planned.

2.7.6. Base Transportation Officer. Advises on proper shipping containers and transportation requirements, including the hazardous waste manifest. Works with munitions personnel to arrange shipment of hazardous waste munitions. If required by state regulations, provides transportation vehicles and drivers that possess a current commercial drivers license (CDL) to transfer hazardous waste to the DRMO.

2.7.7. Defense Reutilization and Marketing Office. The Defense Reutilization and Marketing Service, through their DRMOs, is the DoD hazardous waste disposal agent. Responsibilities include the following:

2.7.7.1. Providing a hazardous waste disposal service to the installation;

2.7.7.2. Providing information on hazardous waste profile sheet, Defense Industrial Supply Center, EPA land disposal requirements;

2.7.7.3. Completing and signing the hazardous waste manifest when the designee of the installation commander;

2.7.7.4. Providing a copy of "closed" hazardous waste manifests to the environmental manager once received from the TSDF;

2.7.7.5. Recordkeeping of all hazardous waste profile sheets and associated reference numbers, and maintaining copies of manifests for three years;

2.7.7.6. Adhering to generating activity responsibilities regarding any waste streams it generates; and

2.7.7.7. Adhering to all tenant responsibilities.

2.7.8. HAZMAT Planning and Response Teams.

Ensure adequate preparation and necessary resources for responding to hazardous waste releases (see AFPAM 32-4013, *Hazardous Materials Emergency Planning and Response Guide* for further guidance).

2.7.9. Base Supply. When required, establishes a single point of contact for controlling required hazardous waste supply actions and for processing transactions. Processes paperwork transactions, and maintains computer records for hazardous waste disposal actions. Transactions are processed to record turn-in actions and produce disposal documentation when disposal is required and authorized by the environmental manager. Base supply, however, does not accept physical custody of hazardous waste. Prepares a Disposal Turn-In Document using DD Form 1348-1, DoD Single Line Item Release/Receipt Document.

2.7.9.1. The current capability for the standard base supply system to process hazardous waste transactions remains available for those installations desiring to use it. However, where installations have developed alternate procedures and systems for hazardous waste disposal, the installation commander has the option to use a local system. This does not transfer responsibilities identified in Air Force supply policies and procedures from base supply to civil engineering or any other organization. It only makes the use of standard base supply system hazardous waste processing procedures optional and gives the installation commander the flexibility to implement one program, one manager, one stop processing for hazardous waste using any organization or system that fulfills DoD requirements for hazardous waste turn-in and disposal. Prior to implementing any change from standard base supply system hazardous waste processing, local operating instructions must be developed and coordinated with all base level activities having Air Force supply responsibilities.

2.7.10. Contracting. Ensures timely and effective contracting support is provided to environmental managers' to accomplish hazardous waste management. This includes using applicable provisions of the Federal Acquisition Regulation (FAR) and environmental policies and procedures.

2.7.11. Accounting and Finance Officer. Commits funds using the AF Form 616, Fund Cite Authorization (FCA) obligates funds when DD Form 1348-1 are received, processes MILSBILLS billings, and requests adjustments based on the environmental manager's monthly M-15 report. For overseas locations, the Military Interdepartmental Purchase Request is used instead of the interfund billing system.

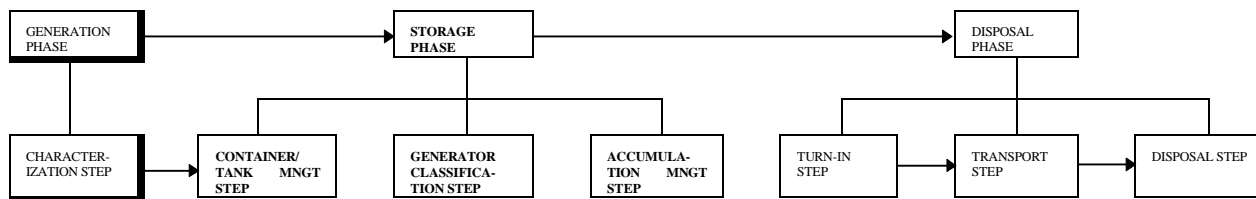
2.7.12. Air Force Installation Tenants. Complies with the installation's hazardous waste management program. When a tenant is in non-compliance with hazardous waste laws, the installation commander has the authority to take whatever action is necessary to require tenants (**and all contractors**) to comply. Tenant responsibilities include the following:

- 2.7.12.1. Complying with applicable portions of the hazardous waste management plan and ensuring internal operating procedures are consistent;
- 2.7.12.2. Providing input for their portions of the hazardous waste management plan;
- 2.7.12.3. Assuring necessary permits cover their off-base activities,

- 2.7.12.4. Conducting their activities in accordance with the installation's permit requirements; and
- 2.7.12.5. Submitting reports required by the installation's hazardous waste management plan within time frames established.

Chapter 3

HAZARDOUS WASTE GENERATION (CHARACTERIZATION)



3.1. Overview. A waste is a solid, liquid, or gaseous substance that no longer has a use for its intended purpose. EPA defines waste as hazardous if it has certain properties that could pose dangers to human health and the environment after it is discarded. The hazardous waste life-cycle begins with the Generation Phase, which includes generating waste, determining if the waste generated is hazardous, and characterizing hazardous waste. Hazardous waste generation is the physical activity creating the waste, while hazardous waste characterization defines and identifies waste as hazardous.

3.1.1. Generation. Generation of hazardous waste results from a variety of processes and procedures. The unit or group involved in the hazardous waste generation is referred to as the generating activity. Examples of Air Force generating activities include corrosion control,

transportation, vehicle maintenance, auto hobby activities, explosive ordnance disposal, non-destructive inspection, dry cleaning, reproduction and printing, aircraft maintenance, base hospital activities, photo lab activities, pest management, materials and analytical lab activities, and plating. Hazardous waste generated by these activities include spent solvents, paint thinners, contaminated paint removers, wiping rags, expended photo developing solutions, waste petroleum products, battery acid, dry-cleaning solvents, contaminated inks, cleaning fluids, pesticide residues, expended electroplating solutions, and hazardous materials which can no longer be used. Although there are several generating activities on an installation, the installation as a whole is considered a single generator for regulatory purposes.

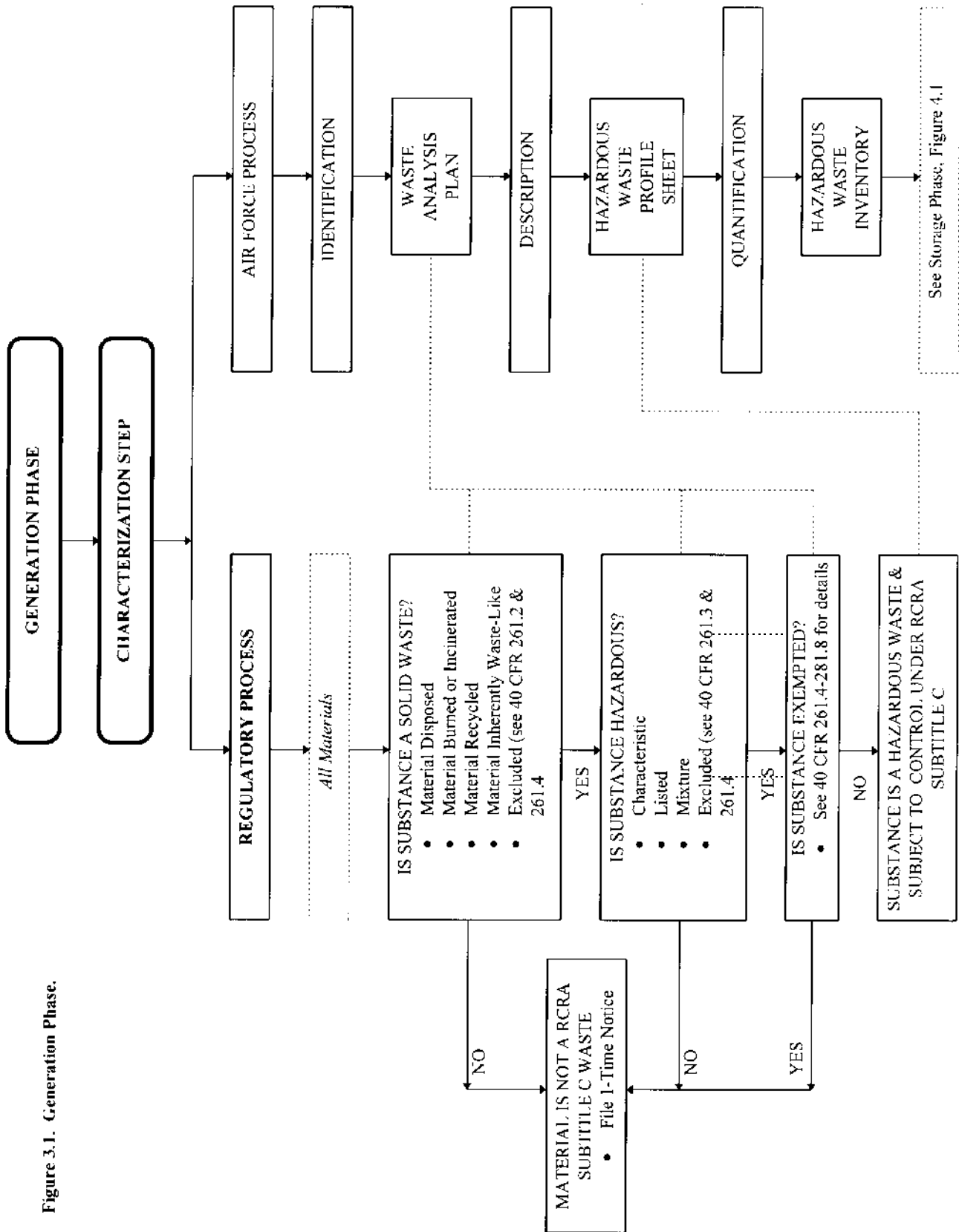


Figure 3.1. Generation Phase.

3.1.2. Is it Regulated? Most solid waste that is generated is not hazardous. To determine whether a specific substance being discarded is regulated as hazardous by RCRA, three questions must be answered: is the substance a solid waste?; is it a hazardous waste?; and is it exempted by RCRA regulation?

3.1.3. Characterization. Once a waste is determined hazardous, it must be listed or characterized. Each generating activity characterizes their hazardous waste following the Air Force process of identifying the type of hazardous waste, describing the hazardous waste, and quantifying the amount generated. A listed hazardous waste is a waste already determined by the EPA to be hazardous and is specifically listed as such.

3.1.4. Appendix I to 40 CFR Part 260. Appendix I to 40 CFR Part 260, *Overview of Subtitle C Regulations*, Figures 1 through 4, should be used in conjunction with this chapter as you review the characterization substeps.

3.2. Hazardous Waste Regulatory Process. Each generating activity must determine if any substance, which is to be discarded, is actually a hazardous waste subject to RCRA Subtitle C rules. The regulatory process (see figure 3.1) has three criteria which establishes a hazardous waste so regulated.

3.2.1. Is Substance a Solid Waste? The first step is to determine if the substance is classified as a solid waste. Solid wastes, by definition, are not strictly solid; solid wastes include liquids and containerized gases. The following criteria define a substance as a solid waste:

- The substance is abandoned by being disposed of, burned, or incinerated.
- The substance is accumulated, stored, or treated (but not recycled) before or in lieu of being disposed of, burned, or incinerated.
- The substance is a secondary material and is recycled; or accumulated, stored, or treated before recycling.
- The substance is inherently waste-like and is recycled.

3.2.1.1. Some substances are excluded from classification as a solid waste. If the generating activity believes a waste falls under one of the following exclusions (the list is not all inclusive), they should review the exclusions with the environmental manager to make the proper determination:

3.2.1.1.1. Substances that are being recycled by being used, reused, or returned to the original process without first being reclaimed (such as “off-spec” jet fuel); [40 CFR § 261.2]

3.2.1.1.2. Domestic sewage; [40 CFR § 261.4]

3.2.1.1.3. Industrial wastewater discharges covered by the Clean Water Act; [40 CFR § 261.4]

3.2.1.1.4. Irrigation return flows; [40 CFR § 261.4]

3.2.1.1.5. Substances reclaimed and returned to the generating process by means of a totally enclosed

reclamation process and means of conveyance; and [40 CFR § 261.4]

3.2.1.1.6. Radioactive substances controlled by the Atomic Energy Act. [40 CFR § 261.4]

3.2.2. Is Substance Hazardous? The next step is to determine if the solid waste is hazardous. EPA considers a waste to be hazardous if it possesses certain characteristics (ignitable, corrosive, reactive, or toxic) or if it is on a list of specific wastes determined by the EPA to be hazardous. A mixture of a non-hazardous waste and a characteristic hazardous waste or a listed hazardous waste is considered a hazardous waste until proven otherwise. Table 3.8 provides a matrix of the typical hazardous wastes generated at Air Force installations. [40 CFR § 261.3]

3.2.2.1. Characteristic wastes meet one or more of the following descriptions:

3.2.2.1.1. Ignitable--a liquid that has a flash point less than 140° F; a non-liquid capable, under normal ambient conditions, of causing fire through friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard; a compressed gas defined as ignitable by DOT regulation (49 CFR § 173.300); or an oxidizer as defined by DOT regulation (49 CFR § 173.151). Ignitable wastes are identified by the EPA hazardous waste number D001. [40 CFR § 261.21]

3.2.2.1.2. Corrosive--aqueous solutions having a pH greater than or equal to 12.5 (strong base), or less than or equal to 2 (strong acid); or a liquid which corrodes steel faster than 0.25 inch per year at 130° F. Corrosive wastes are identified by the EPA hazardous waste number D002. [40 CFR § 261.22]

3.2.2.1.3. Reactive--materials that react violently with water; are normally unstable and readily undergo violent changes without detonating; form potentially explosive mixtures with water; when mixed with water, generate toxic gases, vapors or fumes in a quantity sufficient to harm humans or the environment; contain cyanide or sulfide which, when exposed to conditions of pH between 2 and 12.5, generates toxic gases, vapors, or fumes in a quantity sufficient to harm humans or the environment; is capable of detonation or an explosive reaction if subjected to a strong initiating source or if heated under confinement; capable of detonation or explosive decomposition or reaction at normal ambient conditions; or classified as a DOT forbidden explosive, a Class A explosive (1.1 or 1.2 explosives), or Class B explosive (1.2 or 1.3 explosives). Reactive wastes are identified by the EPA hazardous waste number D003. [40 CFR § 261.23]

3.2.2.1.4. Toxic--materials that are harmful or fatal when swallowed or comes in contact with the skin. When disposed of on land, contaminated liquid might drain (leach) from the waste and pollute groundwater. Toxicity is determined through the Toxicity Characteristic Leaching Procedure (TCLP), a test contained in *Test*

Methods for Evaluating Waste, Physical/Chemical Methods, EPA Publication SW-846. The test determines if the hazardous waste contains certain constituents (certain metals, pesticides, and organic chemicals) at concentrations listed in Table 1 of 40 CFR § 261.24. Toxic wastes are identified by a range of EPA hazardous waste numbers, D004 through D043. [40 CFR § 260.11 and 261.24]

3.2.2.2. Listed wastes include wastes determined by the EPA to be hazardous and placed on selected lists published in the CFR. There are three groups of Listed Wastes:

3.2.2.2.1. **Non-specific Source Wastes**--wastes generated by generic activities, such as degreasing and surface preparation. Known as F-list wastes, non-specific source listed wastes include certain spent solvents, plating wastes, metal treating wastes, and certain chlorinated organic compounds. [40 CFR § 261.31]

3.2.2.2.2. **Specific Source Wastes**--generated by specific sources or industries. Known as K-list wastes, they include organic chemicals, inorganic pigments, waste from petroleum refining, veterinary, pharmaceutical, cooking industries, and explosives. The Air Force does not typically generate any K-list wastes. [40 CFR § 261.32]

3.2.2.2.3. **Discarded Commercial Wastes**--wastes that contain discarded commercial products, off-specification commercial chemical products, container residues, or spill residues, and have a sole active ingredient consisting of the generic chemicals listed on the P-list or U-list. These waste codes refer to specific chemical substances that are the product of a specific manufacturing or formulation process. Discarded commercial wastes include chloroform, creosote, dated drugs, and reagents. [40 CFR § 261.33]

3.2.2.3. **Acute Hazardous Waste.** Within the listed wastes, there are certain wastes which are acutely toxic in nature and are classified as acute hazardous waste. These hazardous wastes have been found to be fatal to humans in low doses or capable of significantly contributing to an increase in serious irreversible or incapacitating reversible illnesses. Requirements for acute wastes are more stringent than those for hazardous waste. Acute hazardous waste includes all P-list wastes and some F-list wastes. [40 CFR § 261.31, 261.32, and 261.33]

3.2.2.4. **Hazardous Waste Mixtures.** Non-hazardous solid waste mixed with a listed waste is still considered a hazardous waste. However, if the waste is listed solely because it exhibits one of the four characteristics of a hazardous waste, and the mixture no longer exhibits any of those characteristics, the mixture is not considered hazardous. Comment: Mixing hazardous waste with non-hazardous waste to render it non-hazardous is a treatment method requiring a permit. [40 CFR § 261.3]

3.2.2.5. **Excluded Wastes.** Some wastes are excluded from classification as a hazardous waste. If a generating

activity believes that a waste falls under one of the following exclusions (the list is not all inclusive), they should review the exclusions with the environmental manager to make the proper determination:

3.2.2.5.1. Mixture of wastewater and certain hazardous wastes the discharge of which is covered by the Clean Water Act; [40 CFR § 261.3]

3.2.2.5.2. Household waste (from residential sources only); [40 CFR § 261.4]

3.2.2.5.3. Agricultural wastes returned to soils as fertilizers; [40 CFR § 261.4]

3.2.2.5.4. Specific ash and slag waste from coal or fossil fuel combustion; [40 CFR § 261.4]

3.2.2.5.5. Specific petroleum-contaminated media and debris from corrective actions for underground tanks (see 40 CFR Part 268) that fail EPA's Toxicity Characteristic test (hazardous waste codes D018 through D043); [40 CFR § 261.4]

3.2.2.5.6. Discarded arsenic-treated wood or wood products which fail the test for Toxicity Characteristic for hazardous waste codes D004 through D017; [40 CFR § 261.4]

3.2.2.5.7. Non-terne plated used oil filters that are not mixed with listed hazardous waste if the filters have been gravity hot-drained; and [40 CFR § 261.4]

3.2.2.5.8. Used chlorofluorocarbon refrigerants from certain totally enclosed devices provided the refrigerant is reclaimed for further use. [40 CFR § 261.4]

3.2.3. **Is Substance Exempted?** Finally, there are many substances, which although hazardous, are exempt under a variety of criteria. If a generating activity believes that a waste falls under one of the following general exemptions (the list is not all inclusive), they should review the following RCRA exemptions with the environmental manager to make the proper determination:

3.2.3.1. Sample collected for testing to determine characteristics or composition, as long as the sample is in transport to or from the laboratory, or being stored prior to transport or at the laboratory (once the sample is returned, it is no longer exempted); [40 CFR § 261.4]

3.2.3.2. Treatability study samples not exceeding 10,000 kg in quantity; [40 CFR § 261.4]

3.2.3.3. Waste generated by conditionally exempt small quantity generators; [40 CFR § 261.5]

3.2.3.4. Certain recyclable substances (such as batteries and scrap metal); [40 CFR § 261.6]

3.2.3.5. Residues of hazardous waste in empty containers or inner liners, provided the waste is not a listed acute hazardous waste; and [40 CFR § 261.7]

3.2.3.6. PCB wastes regulated under the Toxic Substances Control Act. [40 CFR § 261.8]

3.3. Air Force Characterization Process. The Air Force process to characterize waste incorporates the regulatory process for determining if a substance is regulated as a hazardous waste during the identification

substep and for documenting that fact in the description substep.

3.4. Identification Substep. Once the substance is determined a hazardous waste, it must be properly identified as a waste stream on the installation. A waste stream is identified as a process that generates a specific solid waste and is assigned a unique identification number at the installation. (DOT refers to EPA hazardous waste numbers as "*waste streams*"; not to be confused with the Air Force term for waste streams.) The components of the waste streams are identified either by testing in accordance with methods specified by EPA in the appendices to 40 CFR Part 261, or by applying knowledge of the hazardous characteristics of the waste in light of materials and processes used. Waste sampling and chemical analysis are required by EPA or the state if the constituents of the waste stream are unknown, if hazardous waste characteristics are unknown, or if the waste is subject to land disposal restrictions.

3.4.1. Waste Analysis Plans. The waste analysis plan is the primary document used to identify waste streams that are regulated as hazardous waste (see paragraph 3.6.1., Developing the Hazardous Waste Stream Inventory). Written by bioenvironmental engineering services, the waste analysis plan describes the installation's procedures for identifying all potential hazardous waste streams and determining which hazardous waste streams require detailed hazardous waste determination. Each installation's waste analysis plan is incorporated into the hazardous waste management plan. A sample waste analysis plan is included in Attachment 2 - Sample hazardous waste management plan. The waste analysis plan includes the following:

- A list of all wastes generated at the installation which require evaluation and analysis;
- Test methods used (in accordance with the EPA analytical methods published in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, EPA publication SW-846);
- Hazardous waste sampling methods (methods and personal protective and sample collection equipment used for sampling waste materials vary with the form and composition of the waste materials to be sampled; samples are collected using the protocols specified in 40 CFR Part 261 Appendix I);
- Sample analysis locations and frequency (describing how many samples will be taken from each waste stream, as well as describing the sampling strategy; individual samples should be representative of the total waste stream being analyzed);
- A description of the analytical methods used;
- Sample documentation;
- Sample quality assurance/quality control procedures (following the procedures found in SW-846 to assure reliable analytical data which is defensible if

questions are raised about the data used to complete hazardous waste determinations; 40 CFR Part 261 Appendix III lists all of the Test Methods found in SW-846); and

- Sample request procedures.

3.4.1.1. The waste analysis plan should also include a procedure for periodic reevaluation of each waste stream. All waste streams must be evaluated at the following frequencies:

3.4.1.1.1. When the process or operation generating the hazardous waste has changed;

3.4.1.1.2. Annually following the initial characterization for each high volume hazardous waste stream (those that generate four or more 55-gallon drums of waste per year); and

3.4.1.1.3. At least every three years for low volume hazardous waste streams (those that generate three or fewer 55-gallon drums per year).

3.4.1.2. The waste analysis plan is evaluated and reviewed annually to ensure the most up-to-date procedures are conducted. The plan is also reviewed and revised at other times:

3.4.1.2.1. The sample frequency changes due to changes in the annual volume of an installation's hazardous waste stream;

3.4.1.2.2. Analytical parameters change due to changes in the processes generating hazardous waste;

3.4.1.2.3. EPA hazardous waste numbers and/or DOT identification numbers change due to regulatory revisions; and

3.4.1.2.4. Disposal methods change due to revisions to land disposal restrictions or changes in disposal contracts.

3.4.1.3. The waste analysis plan should contain procedures for documenting waste streams that are subject to the solid or hazardous waste exclusions or exemptions. For example, "off-spec" JP-4 used in fire training, used batteries returned to the battery manufacturer, and scrap metal which is being recycled do not have to be managed as hazardous wastes, but their disposition must be documented. The documentation is a one-time notice in the generating activity's, environmental flight's, and bioenvironmental engineering service's files identifying the following:

3.4.1.3.1. Amount and type of waste generated (e.g., 5500 lbs/yr "off-spec" JP-4);

3.4.1.3.2. Subsequent exclusion or exemption (e.g., excluded under 261.2(e)(1)(ii)); and

3.4.1.3.3. The disposition of the waste (e.g., used in on-installation fire training exercise).

This documentation must be maintained on site for at least five years from the date the waste was last sent to on-site or off-site recycling treatment, storage, or disposal. [40 CFR § 268.7(a)(6) and (7)]

3.4.2. Used Oil and Oil Filters. Used oil requirements are identified in 40 CFR Part 279. Used oil will only be

disposed of as hazardous waste when it cannot be recycled or burned for its energy value. Used oil that is recycled by refining it a second time or processing it to produce a usable product or by burning it for energy recovery is not subject to RCRA waste determination requirements even if the used oil exhibits a hazardous waste characteristic. Waste oil to be disposed of must be evaluated to determine whether it exhibits a hazardous waste characteristic or contains a listed hazardous waste. This includes oil filters, oil-soaked absorbent materials, or oily rags which are not recycled.

3.4.2.1. Used oil that is mixed with hazardous waste or contains more than 1000 ppm total halogens is presumed to be hazardous waste because it has been mixed with a

listed, halogenated hazardous waste and is subject to all applicable hazardous waste management requirements when it is burned for energy recovery. Transporters are required to analyze each shipment of waste oil for halogen concentrations. [40 CFR § 279.10(b) and § 279.44]

3.4.2.2. Used oil that is to be burned for energy recovery should be analyzed to determine if it meets the specifications presented in table 3.1. If the oil does not meet the requirements it is considered off-specification and is subject to specific hazardous waste regulations. Bioenvironmental engineering services should contact the DRMO and review waste oil recycling or disposal contracts to determine who will analyze waste oil to determine its regulatory status. [40 CFR § 279.11]

Table 3.1. RCRA Specifications for Used Oil Burned for Energy Recovery.

Constituent/Property	Allowable Level
Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Total Halogens	4,000 ppm maximum
Flash Point	100°F minimum

3.4.2.3. According to EPA regulations on the management of polychlorinated biphenyls (40 CFR 761), all used oil burned for energy recovery is presumed to contain quantifiable levels (2 ppm or greater) of PCBs unless the marketer obtains analyses or other information that the used oil fuel does not contain PCBs.

3.4.2.4. Oil filters must be properly drained following the method described in the May 20, 1992 Federal Register (57 FR 21524). If an oil filter is picked up by hand and used oil immediately drips or runs from the filter, the filter is not considered drained and must be subjected to a determination of whether it exhibits any characteristic of hazardous waste.

3.4.3. **DoD Ammunition and Explosive Safety Standards.** All conventional explosive ordnance, whether it remains useable or has been designated as waste, will be managed in accordance with DoD 6055.9-STD, *DoD Ammunition and Explosives Safety Standards*, 30 October 1992. Conventional explosive ordnance operations involving hazardous waste must be managed in accordance with the applicable RCRA requirements. If any RCRA requirements conflict with the *DoD Ammunition and Explosives Safety Standards*, the responsible individual, working with the environmental manager, must notify the appropriate regulatory agency and, if necessary, expeditiously elevate any disputes through the chain of command for resolution. In resolving such conflicts, prevention of injury and

protection of life will be the primary concern of the Air Force decision maker. All conventional explosive ordnance operations, whether or not subject to RCRA, must be performed in a responsible manner to prevent undue damage to the environment.

3.4.3.1. All generation, transportation, storage, treatment, or disposal of conventional explosive ordnance designated as hazardous waste is subject to RCRA requirements. Conventional explosive ordnance will be identified as hazardous waste when: an authorized official (person designated in writing) records in writing a determination that the conventional explosive ordnance will be discarded; and custodians of the conventional explosive ordnance receive this written determination that the conventional explosive ordnance is to be discarded and, therefore, subject to RCRA regulation. (**NOTE:** Prior written authorization is not required if safety or other considerations (e.g., an emergency response conducted by Explosive Ordnance Disposal (EOD) unit or a response to mitigate an imminent hazard) preclude obtaining prior written authorization.)

3.4.3.2. The authorized official must take into account the facts and circumstances applicable to each situation in making a determination to discard. The following guidelines should be used in making this determination:

3.4.3.2.1. A determination to discard excess conventional explosive material that is safe and stable in normal logistical environments by military standards may be

made only after all efforts have been exhausted to reuse, recycle, recover, or sell such material.

3.4.3.2.2. A determination to discard conventional explosive ordnance that may be unstable or unsafe to store or transport should be made by an authorized official after conducting appropriate testing or inspection, if conditions allow, or if it is readily apparent that there is no reasonable alternative for discarding the material.

3.4.3.2.3. Generally, conventional explosive ordnance manufacture, assembly, testing, training, intended use, or range management do not constitute hazardous waste management. Some wastes generated by these operations, however, may be subject to RCRA.

3.4.3.3. At all times, accounting classification of conventional explosive ordnance must accurately reflect its actual disposition and condition. Prior to making the determination to discard, the conventional explosive ordnance material will normally be placed in the Air Force equivalent of the Resource Recovery and Disposition Account (RRDA) thereby removing them from the active inventory and beginning the evaluation process. When a decision to discard has been made, the conventional explosive ordnance material will be designated a hazardous waste. Upon the decision to discard, it must be properly transferred to the Air Force equivalent of the Hazardous Waste Account (BHW) in order to ensure proper management under RCRA. If the decision is made to discard the conventional explosive ordnance item from the active inventory without further evaluation, the item will be removed from the active inventory and will be placed directly in the BHW account, bypassing the RRDA account.

3.4.3.4. Conventional explosive ordnance that has previously been designated as waste, but for which a legitimate use subsequently is identified, may be re-designated as non-waste, not subject to RCRA. An authorized official will record this determination in writing. If this determination cannot be made, 40 CFR 261.3(c)(1) states that a hazardous waste will remain a hazardous waste unless and until the waste ceases to exhibit a characteristic of a hazardous waste as described under 40 CFR Part 261, Subpart C; or it has been specifically excluded by regulation (i.e., delisted).

3.4.4. **Collecting and Analyzing Waste Samples.** An essential part of any sampling and analytical process is ensuring the integrity of the sample from collection to data reporting. The possession and handling of samples should be traceable from collection through analysis and final disposition. The documentation of the sample history is called chain-of-custody and is needed if there is any possibility that analytical data or conclusions based on the data will be used in litigation. The parts of the chain-of-custody process include sample labels, sample seals, field logbooks, chain-of-custody records, laboratory sample request sheets, and waste analysis reports. Specific procedures for collecting and analyzing waste

streams is described in the waste analysis plan, chapter 4, of the sample hazardous waste management plan, attachment 2.

3.4.4.1. Sample labels are placed on containers prior to sampling and filled out at sample collection. Necessary information includes sample number, name of collector, date and time of collection, place of collection, and any important remarks. Sample seals are used to detect unauthorized tampering with samples; the seal is attached so it is necessary to break the seal to open the sample container. Bioenvironmental engineering services can provide more information on sample collection labels and seals.

3.4.4.2. All information pertinent to field surveys and sampling should be recorded in a field logbook. The logbook should record the following information:

- 3.4.4.2.1. Location of the sampling point;
- 3.4.4.2.2. Name and address of the installation and activity that generated the waste;
- 3.4.4.2.3. Type of process(es) producing the waste;
- 3.4.4.2.4. Physical form of waste, such as sludge, liquid, solid, etc;
- 3.4.4.2.5. Suspected waste composition;
- 3.4.4.2.6. Waste stream number;
- 3.4.4.2.7. Number and volume of sample taken;
- 3.4.4.2.8. Purpose of sampling;
- 3.4.4.2.9. Description of sampling point and sampling methodology;
- 3.4.4.2.10. Date and time of collection;
- 3.4.4.2.11. Sample collector's identification number;
- 3.4.4.2.12. Lab that will analyze the sample and method of shipment;
- 3.4.4.2.13. References, such as maps and photographs of the sampling site;
- 3.4.4.2.14. Field observations;
- 3.4.4.2.15. Any field measurements made, such as pH or flammability; and
- 3.4.4.2.16. Signature of personnel responsible for logbook entries.

3.4.4.3. A chain-of-custody record should also be filled out and accompany every sample. This record contains the following information:

- 3.4.4.3.1. The sample number;
- 3.4.4.3.2. Signature of collector;
- 3.4.4.3.3. Date and time of collection;
- 3.4.4.3.4. Place and address of collection;
- 3.4.4.3.5. Waste type;
- 3.4.4.3.6. Signature of persons involved in the chain of custody; and
- 3.4.4.3.7. Inclusive dates of possession.

3.4.4.4. A sample analysis request sheet should accompany the sample to the laboratory. The field portion of the form is completed by the person collecting the sample and should include pertinent information noted in the logbook. The laboratory portion of the form is then completed by laboratory personnel and includes the name

of the person receiving the sample, laboratory sample number, date and time of sample receipt, sample allocation, and analysis performed.

3.4.4.5. Samples collected for the sole purpose of determining characteristics and composition do not have to be managed as hazardous waste while the sample is shipped to a laboratory, temporarily stored by a laboratory, or returned to the installation.

3.4.4.6. Sample shipments must comply with all applicable DOT classification, description, packaging, marking, labeling, and other transportation requirements for hazardous materials. A sample may be excluded under DOT requirements, but the EPA requires the following information accompany every sample shipment:

3.4.4.6.1. Sample collector's name, mailing address, and telephone number;

3.4.4.6.2. Laboratory's name, mailing address, and telephone number;

3.4.4.6.3. Quantity of the sample;

3.4.4.6.4. Date of the shipment; and

3.4.4.6.5. Description of the sample.

3.5. Description Substep. The next substep in the hazardous waste characterization process is description. This part of characterization is describing all hazardous waste streams when they are generated on the installation, as required by the waste analysis plan. The information obtained through waste identification in accordance with the installation's waste analysis plan is used to complete the hazardous waste profile sheet on each hazardous waste stream.

3.5.1. **Hazardous Waste Profile Sheet.** DRMS Form 1930, **Hazardous Waste Profile Sheet**, is used for describing hazardous waste streams. The hazardous waste profile sheet is used for all disposal actions, whether or

not the DRMO is the disposal agent. The hazardous waste profile sheet can be obtained from the local DRMO. If the local DRMO is not the disposal agent, the hazardous waste profile sheet can be obtained from the base environmental function.

3.5.1.1. DRMO uses the information contained on the hazardous waste profile sheet to alert disposal contractors of possible disposal restrictions. DRMO assigns an initial reference number to each hazardous waste profile sheet. Subsequent turn-ins of the same waste stream do not require that the hazardous waste profile sheet accompany the waste. Instead, the generating activity simply enters the reference number in the "Remarks" section (block AA) of the disposal turn-in document, another document submitted when waste is turned in. The hazardous waste profile sheet filed at DRMO becomes part of the operating record when DRMO is operating a permitted storage facility. All hazardous waste profile sheets must be updated by 1 December each year to DRMO and when the waste stream changes.

3.5.1.2. Analytical results are used to complete the hazardous waste profile sheet. All analytical results from waste evaluation activities should be attached to the hazardous waste profile sheet and accompany all disposal documents provided to the DRMO.

3.5.2. **Completion of the Hazardous Waste Profile Sheet.** The hazardous waste profile sheet consists of three parts (see figures 3.2 and 3.3, and table 3.2). The waste generating activity, with the assistance of the base functions identified below, has the responsibility of completing Parts I and II of the hazardous waste profile sheet. The DRMO completes Part III of the hazardous waste profile sheet. Initial sampling may be required in order to properly complete these parts.

Figure 3.2. DRMS Form 1930, Hazardous Waste Profile Sheet (Front).

HAZARDOUS WASTE PROFILE SHEET			
PART I			
A. GENERAL INFORMATION			
WASTE PROFILE NO. _____			
1. GENERATOR NAME Andrews Air Force Base			
2. FACILITY ADDRESS Protective Coating Shop 207 Knox Street Andrews AFB, MD		3. GENERATOR USEPA ID MD9854761032	
5. ZIP CODE 20331-5000		4. GENERATOR STATE ID 34097	
6. TECHNICAL CONTACT Lt Col Mike Newberry		7. TITLE Env Manager	
		PHONE (301) 981-2348	
B. 1. NAME OF WASTE Waste Abrasive Blasting Media with Paint Chips			
2. USEPA or STATE WASTE CODE(S) D007, D008			
3. PROCESS GENERATING WASTE Paint Stripping, AB-001			
4. PROJECTED ANNUAL VOLUME/UNITS 20,000 lbs / year 5. MODE OF COLLECTION Drum			
6. IS THIS WASTE IS A DIOXIN LISTED WASTE AS DEFINED IN 40 CFR 261.31 (e.g., F020, F021, F023, F026, F027, OR F028)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
7. IS THIS WASTE RESTRICTED FROM LAND DISPOSAL (40 CFR 268)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
HAS AN EXEMPTION BEEN GRANTED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
DOES THE WASTE MEET APPLICABLE TREATMENT STANDARDS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO REFERENCE STANDARDS 40 CFR 268.41			
PART II			
1. MATERIAL CHARACTERIZATION (OPTIONAL-NOT REQUIRED DATA)		4. MATERIAL COMPOSITION	
COLOR Brown		COMPONENT CONCENTRATION RANGE	
DENSITY _____ BTU/LB _____		Chromium 125 mg/l 0.0125 %	
TOTAL SOLIDS _____ ASH CONTENT _____		Lead 360 mg/l 0.036 %	
LAYERING: <input type="checkbox"/> MULTILAYERED <input type="checkbox"/> BILAYERED <input type="checkbox"/> SINGLE PHASE		Non-hazardous _____ 99.95%	
2. RCRA CHARACTERISTICS		blasting beads -- --	
PHYSICAL STATE <input checked="" type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> SEMI-SOLID		TOTAL _____ 100%	
<input type="checkbox"/> GAS <input type="checkbox"/> OTHER		5. SHIPPING INFORMATION	
TREATMENT GROUP: <input type="checkbox"/> WASTEWATER <input checked="" type="checkbox"/> NON-WASTEWATER		DOT HAZARDOUS MATERIAL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
<input type="checkbox"/> IGNITABLE (D001) <input type="checkbox"/> REACTIVE (D003)		PROPER SHIPPING NAME Hazardous Waste, Solid, 9	
FLASH POINT (F) _____ <input type="checkbox"/> WATER REACTIVE		NA 3077, PG III, (chromium, lead), RQ	
<input type="checkbox"/> HIGH TOC (> 10%) <input type="checkbox"/> CYANIDE REACTIVE		U.N. or	
<input type="checkbox"/> LOW TOC (< 10%) <input type="checkbox"/> SULFIDE REACTIVE		HAZARD CLASS 9 N A NO NA 3077	
<input type="checkbox"/> CORROSIVE (D002) <input type="checkbox"/> TOXICITY CHARACTERISTIC (SEE REVERSE FOR LISTING)		ADDITIONAL DESCRIPTION _____	
<input type="checkbox"/> CORRODES STEEL		METHOD OF SHIPMENT <input type="checkbox"/> BULK <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER: _____	
3. CHEMICAL COMPOSITION (ppm or mg/L)		CERCLA REPORTABLE QUANTITY 1 lb	
COPPER _____ PHENOLICS _____		EMERGENCY RESPONSE GUIDE PAGE	
NICKEL _____ TOTAL HALOGENS _____		DOT PUBLICATION 5800.4 PAGE NO. 31 EDITION (YR) 93	
ZINC _____ VOLATILE ORGANICS _____		SPECIAL HANDLING INFORMATION _____	
CHROMIUM-HEX _____ PCBs _____			
(OTHER: _____)			
NOTE: EXPLOSIVES, SHOCK SENSITIVE, PYROPHORICS, RADIOACTIVE, AND ETIOLOGICAL WASTE NORMALLY ARE NOT ACCEPTED BY DRMO			
6. GENERATOR CERTIFICATION			
BASIS FOR INFORMATION			
<input checked="" type="checkbox"/> CHEMICAL ANALYSIS (ATTACH TEST RESULTS)			
<input type="checkbox"/> USER KNOWLEDGE (ATTACH SUPPORTING DOCUMENTS - Explain how and why these documents comply with RCRA requirements) _____			
I, Lt Col Mike Newberry , HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL ATTACHED DOCUMENTS IS TO THE BEST OF MY KNOWLEDGE AN ACCURATE REPRESENTATION OF THE WASTES TURNED IN TO THE DRMO. ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.			
SIGNATURE OF GENERATOR'S REPRESENTATIVE			DATE 10 March 1994

Figure 3.3. DRMS Form 1930, Hazardous Waste Profile Sheet (Back).

TOXICITY CHARACTERISTIC LIST					
EFFECTIVE: 28 SEP 90 - LARGE QUANTITY GENERATORS 29 MAR 91 - SMALL QUANTITY GENERATORS					
CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
<input type="checkbox"/> ARSENIC	D004	_____	<input type="checkbox"/> HEXACHLORO-1,3,- BUTADIENE	D033	_____
<input type="checkbox"/> BARIUM	D005	_____	<input type="checkbox"/> HEXACHLOROETHANE	D034	_____
<input type="checkbox"/> BENZENE	D018	_____	<input checked="" type="checkbox"/> LEAD	D008	360
<input type="checkbox"/> CADMIUM	D006	_____	<input type="checkbox"/> LINDANE	D013	_____
<input type="checkbox"/> CARBON TETRACHLORIDE	D019	_____	<input type="checkbox"/> MERCURY	D009	_____
<input type="checkbox"/> CHLORDANE	D020	_____	<input type="checkbox"/> METHOXYCHLOR	D014	_____
<input type="checkbox"/> CHLOROBENZENE	D021	_____	<input type="checkbox"/> METHYL ETHYL KETONE	D035	_____
<input type="checkbox"/> CHLOROFORM	D022	_____	<input type="checkbox"/> NITROBENZENE	D036	_____
<input checked="" type="checkbox"/> CHROMIUM	D007	125	<input type="checkbox"/> PENTACHLOROPHENOL	D037	_____
<input type="checkbox"/> O-CREOSOL	D023	_____	<input type="checkbox"/> PYRIDINE	D038	_____
<input type="checkbox"/> M-CREOSOL	D024	_____	<input type="checkbox"/> SELENIUM	D010	_____
<input type="checkbox"/> P-CREOSOL	D025	_____	<input type="checkbox"/> SILVER	D011	_____
<input type="checkbox"/> CRESOL	D026	_____	<input type="checkbox"/> TETRACHLOROETHYLENE	D039	_____
<input type="checkbox"/> 2,4-D	D016	_____	<input type="checkbox"/> TOXOPHENE	D015	_____
<input type="checkbox"/> 1,4-DICHLOROBENZENE	D027	_____	<input type="checkbox"/> TRICHOETHYLENE	D040	_____
<input type="checkbox"/> 1,2-DICHLOROETHANE	D028	_____	<input type="checkbox"/> 2,4,5-TRICHLOROPHENOL	D041	_____
<input type="checkbox"/> 1,1-DICHLOROETHYLENE	D029	_____	<input type="checkbox"/> 2,4,6-TRICHLOROPHENOL	D042	_____
<input type="checkbox"/> 2,4-DINITROTOLUENE	D030	_____	<input type="checkbox"/> 2,4,5-TP (SILVEX)	D017	_____
<input type="checkbox"/> ENDRIN	D012	_____	<input type="checkbox"/> VINYL CHLORIDE	D043	_____
<input type="checkbox"/> HEPTACHLOR (AND ITS HYDROXIDE)	D031	_____			
<input type="checkbox"/> HEXACHLOROBENZENE	D032	_____			

PART III	
FOR DRMO USE ONLY	
DRMO VERIFICATION	
<p>1. DATE VERIFIED _____</p> <p>2. RESULTS <input type="checkbox"/> ATTACHED</p> <p>pH _____ FLASH POINT _____ SPECIFIC GRAVITY _____ HALIDES (TOX) _____</p> <p>REACTIVITY: WATER REACTIVITY _____ CYANIDES _____ SULFIDES _____</p> <p>TCLP _____</p> <p>_____</p> <p>_____</p> <p>_____</p>	

Table 3.2. Hazardous Waste Profile Sheet Instructions.

Hazardous Waste Profile Sheet (HWPS) Instructions	
HWPS Element	How To
Part I (to identify waste stream and generator of the waste)	
Section A - General Information & Waste Profile Number	General information concerning the generator of the hazardous waste. The waste profile number is determined by the DRMO and consists of the Department of Defense Activity Address Code (DoDAAC) of the generator and a sequential number assigned by the DRMO.
<i>The generating activity completes the rest of this section:</i>	
A1. Generator Name	Enter the organizational name of the generating activity on the installation.
A2. Facility Address	Enter the organizational street address of the generating activity on the installation.
A3. Generator's USEPA ID	Enter the 12-character alpha-numeric descriptor issued by the USEPA to the installation.
A4. Generator State ID	Enter the descriptor issued by the state to the installation (if applicable).
A5. Zip Code	Enter the generating activity's nine digit zip code.
A6. Telephone Contact	Enter the name of environmental manager who will answer technical questions about the waste.
A7. Title	Enter the technical contact's title.
A8. Telephone Number	Enter the technical contact's phone number.
B1. Name of the Waste	Enter a name that is generally descriptive of the waste (e.g., paint sludge, PCB-contaminated dirt, cyanide plating waste).
2. USEPA/Or State I.D. No.	Indicate the appropriate state or USEPA hazardous waste Identification Number (e.g., D001, U119, etc.).
3. Process Generating Waste	List the specific process/operation or source that generates the waste (e.g., paint spray booth, PCB spill, metal plating operation). Include waste stream number.
4. Projected Annual Volume/Units	Enter the amount of this waste that will be generated annually. Use appropriate units to describe this volume (e.g., pounds).
5. Mode of Collection	Describe the method used to collect and store the waste stream (e.g., drums, tanks, ponds).
6. Dioxin Waste	Storage and disposal of Dioxin wastes require special attention. If this waste is a USEPA listed Dioxin waste, indicate "YES" and contact your DRMO representative.
7. Land Disposal Restrictions	Indicate if the waste has been prohibited from land disposal, has received an exemption under 40 CFR 268.8, or meets applicable treatment standards.

Table continued on next page.

Table 3.2. Continued.

Part II (used to identify the waste stream's physical, chemical, and hazard characteristics, chemical and material composition, and shipping information)	
1. Material Characterization: Color Density BTU/LB Ash Content Total Solids Layering	<i>Optional - Not Required Data</i> <ul style="list-style-type: none"> - Describe the color of the waste (e.g., blue, clear, varies). - Indicate the range. The specific gravity of water is 1.0. Most organics are less than 1.0. Chlorinated solvents, most inorganics, and paint sludges are greater than 1.0. - This entry is only required for waste that may have potential for use as a fuel substitute. - This entry is only required for used oil with recovery potential. - Content can be expressed as either a weight percentage or dry weight concentration (mg/kg). - Check all applicable boxes. Multi-layered means more than two layers (e.g., oil/water/sludge). Bi-layered means the waste is comprised of two layers which may or may not be of the same phase (e.g., oil/water, solvent/sludge). Single phased means the waste is homogeneous.
2. RCRA Characteristics (40 CFR Part 261): Physical State Treatment Group Ignitable Corrosive Reactive Toxicity Characteristic	<ul style="list-style-type: none"> - If the four boxes provided do not apply, a descriptive phrase may be entered after "Other". - Check the box which applies to the correct treatment group. - Indicate if the waste is ignitable (D001) and list its liquid flash point obtained using the appropriate testing method (40 CFR § 261.21). The flash point is important from a transportation standpoint (49 CFR § 173.115). Also list if this waste is considered to be a HIGH TOC IGNITABLE (contains > 10% Total Organic Carbon). Knowledge of high/low TOC is required by Land Ban regulations. Solids with flammable potential should be identified in Part 3 (e.g. Pyrophoric, RCRA Reactive, other). - Indicate if the waste is corrosive (D002) and its pH for liquid or liquid portions of the waste. Also indicate if this waste corrodes steel (40 CFR § 261.22). For solid or organic liquid wastes, indicate the pH of a 10% aqueous solution of the waste if applicable. Write "NA" for non-water soluble materials (e.g., dismantled tanks, empty drums, gases). - Indicate if the waste is reactive (D003) and if it is water reactive, cyanide reactive, or sulfide reactive (40 CFR § 261.23). - Check appropriate box and list contaminant level on the back of the form.
3. Chemical Composition	Indicate if any of the listed chemical components (e.g., copper, nickel, phenols, PCBs etc.) are present in the waste and indicate the concentration level in ppm or mg/L. Other - Indications of other hazardous characteristics must be included (e.g., explosives, radioactive, etiological, peroxide-forming, etc.). <i>Note: Explosives, shock sensitive pyrophoric, radioactive, and etiological wastes normally are not accepted by the DRMO for disposal.</i>

Table continued on next page.

Table 3.2. Continued.

4. Material Composition	This is necessary to determine if any listed wastes have been added to a characteristic waste in addition to the basic material makeup. List all organic and/or inorganic components of the waste using specific chemical names. If trade names are used, attach material safety data sheets or other documents which adequately describe the composition of the waste. For each component, estimate the range (in percent) in which the component is present. In the case of extreme pH (2 or less or 12.5 or greater) indicate the specific acid or caustic material present. This list must include any hazardous components listed in Part II which exceed 10,000 ppm (1%). The total of the maximum values of the components must be greater than or equal to 100% including water, earth, etc.
5. Shipping Information: DOT Hazardous Material Proper Shipping Name Hazard Class U.N. or N.A. No. Additional Description CERCLA Reportable Quantity Emergency Response Guide Page Special Handling Information	To identify necessary DOT shipping information for the waste. The presented information is not meant to constitute a standard US DOT certificate given by a shipper offering a package to a transporter. <ul style="list-style-type: none"> - Indicate if waste is regulated by DOT. - Enter the proper DOT shipping name for the waste (49 CFR § 172.101). - Enter the proper DOT hazard class (49 CFR § 172.101). - Enter the proper DOT identification number (49 CFR § 172.101). - Enter any additional shipping information required (49 CFR § 172.203). (e.g., the Packing Group, PG I, PG II, or PG III; "RQ" for reportable quantity; the hazardous substance constituent(s) as they would appear on the manifest; and the packaging specifications). - Enter the reportable quantity for this waste from 49 CFR § 172.101, Appendix A, or 40 CFR Part 302. - Indicate the appropriate guide page found in the latest DOT Publication 5800.6 (or current edition) as required by 49 CFR § 172.602. - Describe those hazards which you know or reasonably believe are or may be associated with short term or prolonged human exposure to this waste (29 CFR Part 1910.1200). If known, identify any carcinogens present in the waste in excess of 0.1% (29 CFR § 1910.1200(d)(4)). Attach relevant documents as part of your response, if appropriate. If documents are attached, identify those attachments. If you have a current material safety data sheet, it may be attached. Also include any additional information that will aid in management of the waste. Failure to make an entry in Part 5 is considered to be a representation that you neither know nor have reason to believe that there are any adverse human health effects associated with exposure to the waste.
6. Generator Certification: Chemical Analysis User Knowledge Signature of Representative	Mandatory supporting documentation, including chemical analysis results, must be attached to the hazardous waste profile sheet. User knowledge is appropriate when it can be documented (e.g., in & out logs, published information, material safety data sheet, process production information). There is room provided to explain 'what' and 'why' user knowledge is used on lieu of analysis. Attach all supporting documentation. An authorized employee of the generator must sign and date this certification on the completed hazardous waste profile sheet.
Part III (Filled in by the appropriate DRMO personnel)	
1. Date Verified	Enter date of last verification testing done on waste stream.
2. Results	Enter results of verification testing or attach test results.

3.5.2.1. The environmental manager will advise on completion of Part I and is responsible for completing information required by EPA land disposal restrictions on the hazardous waste profile sheet. The environmental manager is also responsible for reviewing the hazardous waste profile sheet for accuracy based on the best available information.

3.5.2.2. Bioenvironmental engineering services will advise on completion of the health and hazardous waste identification portions of the hazardous waste profile sheet in Part II, Sections 1-4, and the special handling information in Section 5. Bioenvironmental engineering services also reviews the hazardous waste profile sheet for technical accuracy when requested by the environmental manager. Bioenvironmental engineering services should also maintain a copy of each hazardous waste profile sheet in the generating activities' shop folder.

3.5.2.3. The base transportation officer advises on completion of the proper shipping information, containers, and transportation requirements of Part II, Section 5 of the hazardous waste profile sheet.

3.5.2.4. The generating activity is responsible for completing Part II, Section 6 and attaching a copy of all Material Safety Data Sheets or identifying the locations and national stock numbers within the Hazardous Materials Information System for all chemicals that are known to be in the waste stream.

3.5.3. **Proper Shipping Description.** Before a generating activity can package, mark, label, transport, and dispose of a hazardous waste, they must identify the proper shipping description. General guidelines for identifying the proper shipping description are provided in chapter 5, table 5.1. The total proper shipping description (which includes the proper shipping name, the numerical hazard class or division, the UN or NA identification number, the packing group, and the required additional information) must be entered into Part II, Item 5, on the hazardous waste profile sheet.

3.5.3.1. There are several sources available to assist generating activities in determining the proper shipping description. They include the material safety data sheets provided with all hazardous materials, the Hazardous Materials Information System, and the markings and/or labels found on the original hazardous materials containers. The proper shipping name found on these items can usually be used with slight modifications, especially if the waste stream is generated by a single type of hazardous material. Whenever the above sources are used to determine the proper shipping description, the generating activity must verify its accuracy. The proper shipping description must be listed on the hazardous waste profile sheet for that waste stream and should match the requirements described in 49 CFR Part 172, Subpart C and the Hazardous Materials Table, 49 CFR § 172.101 (see chapter 4 on how to read the Hazardous Materials

Table). If it is not accurate, then the hazardous waste profile sheet must be updated and accompany the hazardous waste through turn-in.

3.5.4. **Land Disposal Restrictions.** Under the 1984 Amendments to RCRA, Congress directed EPA to prohibit all hazardous wastes from land disposal by 1990 unless the wastes are treated to specific treatment standards. The treatment standards require wastes to be treated to certain levels or by specific methods before the waste can be land filled. The purpose of the land disposal restrictions is to prevent threats to human health or the environment caused by leaking land disposal facilities. The EPA has established land disposal restriction requirements, published in 40 CFR Part 268, for all RCRA hazardous wastes. The standards require changes to recordkeeping procedures and the preparation of additional paperwork to be shipped with the hazardous waste manifest. Land disposal restrictions do not apply to the conditionally exempt small quantity generator.

3.5.4.1. The EPA has established treatment standards on the basis of the best demonstrated available technology. "Best" is defined as that technology which offers the greatest reduction of toxicity, mobility, or volume of the waste. To be "demonstrated", a treatment technology must work at a full scale level. To be "available", a treatment technology must be commercially available. The EPA has set three treatment standards for restricted wastes:

3.5.4.1.1. Concentration level to be achieved prior to disposal, the most common type of treatment standard (to establish a concentration level(s) for a specific hazardous waste number, the EPA selected a subset of "hazardous constituents" found in the waste and set standards for each);

3.5.4.1.2. Specified technology to be used prior to disposal; and

3.5.4.1.3. "No land disposal" designation, when the waste is no longer generated, totally recycled, is not currently being land disposed, or no residuals are produced from treatment.

3.5.4.2. There are some general guidelines for determining applicable treatment requirements.

3.5.4.2.1. A generator must determine if a listed waste exhibits a characteristic.

3.5.4.2.2. If a waste has more than one characteristic waste number, it must be treated to meet the treatment standard for each characteristic.

3.5.4.2.3. Mixtures of listed wastes having more than one applicable concentration-based standard for a particular constituent must be treated to the most stringent standard before land disposal is permitted.

3.5.4.2.4. Waste of both listed and characteristic waste numbers must be treated with the methods that are required for each listed waste number (in lieu of that required for the characteristic waste number), provided that the methods also can remove the characteristic

properties. Otherwise, additional treatment must be used to remove the characteristic properties.

3.5.4.2.5. All residues from the listed wastes are considered derived-from listed waste and must meet the same treatment standards as the original listed waste. Residues from the treatment of characteristic wastes are considered characteristic only if they display the original characteristic or if they display another characteristic.

3.5.4.2.6. Soil and debris that are contaminated with restricted waste are subject to land disposal restrictions and must meet the treatment standards before disposal is allowed.

3.5.4.3. The land disposal restrictions establish requirements for testing, notification, and certification for compliance.

3.5.4.3.1. Testing. Generators, treatment facilities, and disposal facilities must test their wastes at a frequency

specified in their waste analysis plans to demonstrate compliance with land disposal restriction treatment standards.

3.5.4.3.2. Notification. All restricted wastes that are shipped to an off-site TSDF must be accompanied by a notification that includes the EPA hazardous waste number and the applicable land disposal restrictions for those wastes.

3.5.4.3.3. Certification. A treatment facility must certify that land disposal restrictions treatment standards are attained before a waste is land disposed.

3.5.4.4. In general, dilution of a waste to comply with the land disposal restrictions is prohibited. However, dilution that is part of a treatment (e.g. mixing for immobilization) is permissible.

Table 3.3. Determination of Treatment Standards.

Steps	Example <i>Sandblast grit, TCLP for Chromium = 600 mg/l</i>
Step 1: Determine all EPA hazardous waste numbers which apply and if the California list applies.	<i>D007 This would not be a California list waste since it is not a liquid.</i>
Step 2: Determine the treatability subgroup or waste description (e.g. batteries).	<i>Waste description is chromium.</i>
Step 3: Determine whether the waste is a wastewater or non-wastewater. ⁽¹⁾	<i>This is a non-wastewater because it is a solid.</i>
Step 4: Look up each hazardous waste number and determine appropriate treatment standard found at 40 CFR § 268.41, § 268.42, or § 268.43.	<i>The treatment standard for D007, non-wastewater is listed at Chromium = 5.0 mg/l.</i>
Step 5: If it is a California list waste, determine appropriate treatment standard found at § 268.32, § 268.42, and Appendix III.	<i>Not Applicable</i>
Step 6: Determine effective date of regulation. All RCRA hazardous wastes are regulated.	<i>Effective date of regulation is August 8, 1990.</i>
1. Wastewaters contain less than 1% by weight total organic carbon (TOC) <u>and</u> less than 1% by weight total suspended solids (TSS). Exception: F001-F005 solvent-water mixtures are defined as wastewaters if they contain less than 1% by weight TOC <u>or</u> 1% by weight of total F001-F005 solvent constituents listed in § 268.41.	

3.5.4.5. The environmental manager must complete the information required by the EPA on land disposal restrictions on the hazardous waste profile sheet (see table 3.3). This information can be located in Part 1 of the hazardous waste profile sheet or as a continuation sheet to Part 1. In the latter case, the attachment must be clearly marked as such on the hazardous waste profile sheet. The following EPA land disposal restriction requirements

must be included on the hazardous waste profile sheet at a minimum.

3.5.4.5.1. All treatability groups must be listed: e.g., wastewater and non-wastewater.

3.5.4.5.2. List all EPA hazardous waste numbers (sometimes called "codes") in the waste stream (e.g. D003).

3.5.4.5.3. List all subcategories (e.g. reactive cyanide is a subcategory to D003-Reactives) (see table 3.4).

Table 3.4. Land Disposal Restrictions Subcategories for Characteristic Wastes.

Land Disposal Restriction Subcategories for Characteristic Wastes The following are RCRA characteristic waste categories for which the EPA established subcategories (treatability groups) in addition to wastewaters and non-wastewaters.	
D001 - Ignitable Subcategories: <ul style="list-style-type: none"> • Ignitable Liquids <ul style="list-style-type: none"> • Organic Liquids • Aqueous Liquids • Wastewaters • Ignitable Reactives • Oxidizers • Ignitable Compressed Gases 	D006 - Cadmium Subcategories: <ul style="list-style-type: none"> • Wastewaters • Non-wastewaters • Cadmium Batteries
D002 - Corrosive Subcategories: <ul style="list-style-type: none"> • Acids • Alkalines (bases) • Other Corrosives 	D007 - Chromium Subcategories: <ul style="list-style-type: none"> • Wastewaters • Non-wastewaters • Chromium Bricks • Chromium Batteries
D003 - Reactive Subcategories: <ul style="list-style-type: none"> • Reactive Cyanides • Explosives • Water Reactives • Reactive Sulfides • Other Reactives 	D008 - Lead Subcategories: <ul style="list-style-type: none"> • Wastewaters • Non-wastewaters • Lead-Acid Batteries
Note: Those characteristic wastes not listed here have only wastewater and non-wastewater subcategory treatability groups.	

3.5.4.5.3.1. Enter the 5 letter treatment code(s) (40 CFR § 268.42, Tables 1, 2 and 3) or cite the Code of Federal Regulation section where the applicable treatment standard(s) appear in lieu of listing each treatment standard. One exception to this is that the treatment standards for each constituent in F001-F005 spent solvents, multi-source leachate (F039), or California listed wastes must be cited on the hazardous waste profile sheet.

3.5.4.5.3.2. If a lab pack is involved, describe whether it contains a waste identified in Appendix IV or V to 40 CFR Part 268. Lab packing for turn-ins to the DRMO may not be done by the generating activity, but must be done by the DRMO contractor.

3.5.4.6. The environmental manager is also responsible for ensuring that the hazardous waste profile sheet is

attached to the manifest along with the applicable land disposal notifications and certifications.

3.6. Quantification Substep. The final substep in the hazardous waste characterization process is quantification. Quantification includes accurately estimating the amount of hazardous waste generated. Quantification is documented on the hazardous waste stream inventory, a compendium of wastes generated or managed at the installation. The inventory provides sufficient information regarding each waste to assist in the overall installation management of all hazardous waste. The inventory (see table 3.5) must contain, at a minimum, the following information: identification of the generating activity; location of the generating activity; unique waste stream number; waste characterization information; and disposal methods for the wastes.

Table 3.5. Hazardous Waste Stream Inventory and Instructions.

HAZARDOUS WASTE STREAM INVENTORY							
Date: 6 Jun 94		Contact Name/Preparer: N. E. Time			Telephone Number: (800) 555-1234		
		Installation: Anywhere Air Force Base			Organization Code: 99 EMS		
Waste Stream Location¹ (Shop/Bldg)	Waste Stream Number²	Estimated Quantity Disposed³	Hazardous Waste Criteria Exhibited & Concentration Limits⁴	EPA/State Hazardous Waste ID Number⁵	EPA Priority Pollutant Number⁶	Disposal Container⁷	Disposal Method⁸
AMARC Grid: B-5 Bldg: 207	PO-001 Waste Paints & Thinners	4,800 lb/yr	I-Flashpoint 120°F (SW-1010) F-Xylene (1-11%)	D001, F003	17	Drum	DRMO
AMARC Grid: B-5 Bldg: 207	PO-002 Spent PD 680 Type I Still Bottom	7,000 lb/yr	I-Flashpoint 95°F (SW-1010) T-Chromium (150 mg/l) (SW-6010)	D001, D007	5	Drum	REC DRMO (100lbs still bottoms per month disposed via DRMO)

Table continued on next page.

Table 3.5. Continued.

HAZARDOUS WASTE STREAM INVENTORY INSTRUCTIONS	
<p>General Information. Each organization on-base that generates hazardous waste should be identified by its organization code and shop code. Tenant organizations, contractors, and others should be identified as specifically as possible. The inventory should also identify the name and telephone number of at least one point of contact at each generating activity.</p>	
1.	Identify for each generating activity the building number, shop code, or other specific location, as appropriate, where hazardous waste is generated. If a generating activity generates waste at several locations, each should be identified. Grid locations from the hazardous waste management plan location map may be used to identify specific locations for accumulation sites, initial accumulation point, and TSDF on-base.
2.	Each waste stream must be assigned a unique identification number (e.g., AB-001), which consists of a hazardous waste process code and a locally assigned number. The locally assigned number may be assigned sequentially for each waste stream generated from a specific process or operation. The hazardous waste process code is assigned from the codes listed in Table 3.6.
3.	Identify the typical and maximum quantity of waste disposed annually. If the waste is infrequently generated, indicate approximate frequency.
4.	Identify all hazardous waste criteria that the waste exhibits, sampling test results , and the test method used. Use the following codes: I-Ignitability; C-Corrosivity; R-Reactivity; T-Toxicity; F for F-List Waste; P for P-List Waste; K for K-List Waste; and U for U-List Waste.
5.	Include the EPA hazardous waste number(s) for each waste stream, as well as any applicable state hazardous waste number(s). Wastes that exhibit one of the four hazardous waste characteristics have the following hazardous waste numbers: Ignitability- D001; Corrosivity - D002; Reactivity - D003; and Toxicity D004 through D043. The hazardous waste numbers for other constituents (F-, K-, P-, and U-list wastes) can be found at 40 CFR Part 261.
6.	If any of the EPA priority pollutants listed in Table 3.7 are present in the waste stream, the appropriate priority pollutant identification number should be entered.
7.	Indicate type of storage container such as drum, tank (above ground or below ground), or other (e.g., waste pile, impoundment). Also indicate any special accumulation conditions such as lab pack, pressurized, heated, cooled, etc.
8.	Identify the disposition of the waste such as DRMO, recycled on base, base-contracted disposal, or some other form of recycling or disposal. Disposal Method Codes: CD-Contractor Disposal; DRMO-Disposal by Defense Reutilization and Marketing Office; SS-Sanitary Sewer; REC-Recycled; ENGY-Burned for Energy Recovery; UIP-Used in Process; and O-Other.

3.6.1. Developing the Hazardous Waste Stream Inventory.

Bioenvironmental engineering services develops and maintains the installation's hazardous waste stream inventory. In preparing the inventory, bioenvironmental engineering services should visit each activity that generates hazardous waste on-base to confirm data (or lack of data) collected on the hazardous waste profile sheet and identify any hazardous wastes which have not been profiled. Bioenvironmental engineering services may also collect samples during these visits in accordance with the waste analysis plan to determine if any of the waste streams encountered are hazardous and should be included in the inventory.

3.6.1.1. The hazardous waste profile sheet is the primary source of information used to complete the installation's hazardous waste stream inventory. Information concerning waste generating activities, EPA hazardous waste number, amount of waste generated, waste characteristics and composition, and waste shipping information is all included on the hazardous

waste profile sheet. Bioenvironmental engineering services should review each of the installation's hazardous waste profile sheets in order to prepare the hazardous waste stream inventory.

3.6.1.2. The generating activity is responsible for providing quantity information on all their hazardous waste streams to bioenvironmental engineering services. The generating activity estimates the typical and maximum quantity of waste disposed annually. This information is included in the installation's hazardous waste stream inventory. The generating activity is also responsible for ensuring that its wastes are accurately weighed prior to disposal.

3.6.1.3. A sample hazardous waste stream inventory is included in chapter 3 of the sample hazardous waste management plan in Attachment 2 of this Guide.

Table 3.6. Hazardous Waste Process Codes.

Abrasive Blasting	Grit, paint chips, expanded media	AB
Aircraft Cleaning	Cleaning compounds	AC
Battery Shops	Battery acid, lead	BA
Biological Operations	Pesticides such as insecticides, herbicides, rodenticide, etc.	BO
Boiler Operations	Morpholine, nitrates	BL
Chemical Paint Stripping	Paint strippers, paint sludge	CP
Decarbonizers	Nitric acid, sulfuric acid, others	DE
Avionics/Electronics	Solvents	ER
Electroplating	Cleaning compounds, chromium, cyanide, tank sludges contaminated with heavy metals	EP
Expired Shelf Life	Expired shelf-life wastes--paints, solvents, cleaning materials, etc.	ES
Firefighting Operations	Aqueous film-forming foam (AFFF)	FF
Fluids Change-out/ Purging	Oily waste, turbine oil, lube oil, hydraulic fluid, contaminated fuel, brake fluid, antifreeze, fluid-containing filters	FC
Industrial and Facility Maintenance	Cleaning supplies, mercury vapor lamp bulbs, PCBs	IM
Industrial Operations	Tool and machine wastes, cutting oils	IO
Installation Restoration	Waste from clean-up of installation restoration program sites	IR
Industrial Waste Treatment	Wastewater treatment sludge, chlorine	IW
Laboratory/NDI	Samples, test chemicals, penetrants	LA
Medical	Mercury, test chemicals, chemotherapeutic drugs	ME
Miscellaneous	Only wastes which cannot possibly be attributed to any other process listed	MS
Ordnance, demil/disposal	Explosive, pyrotechnic, propellant, lead contaminated water, soil or dust	OD
One-Time Only	Purging underground storage tank prior to replacement	OO
Oil Water Separators	Contaminated sludge, floating product	OS
Painting Operations	Paint, paint sludge, filters, surface preparation (solvents)	PO
Preservation and Packaging	Pentachlorophenol, copper arsenite	PP
Photo/X-ray	Fixer, developer	FX
Research and Development	Chemical testing, equipment testing	RD
Spill Clean-up	Absorbants, rags, contaminated soil	SC
Solvents/Degreasing	Cold cleaning solvents, PD 680, MEK	SO

Table 3.7. EPA Priority Pollutants.

Priority Pollutant	Air Force Use	ID Number
Benzene	Fuels	1
Cadmium and compounds	Plating for corrosion control	2
Carbon Tetrachloride	Bearing cleaning, PMEL	3
Chloroform	Bearing shop	4
Chromium and compounds	Plating and paints	5
Cyanides	Plating solutions	6
Dichloromethane	Cold wipedown cleaner	7
Lead and compounds	Batteries, paint, solder	8
Mercury and compounds	Laboratories	9
Methyl Ethyl Ketone	Degreaser/cleaner, aircraft	10
Methyl Isobutyl Ketone	Paints	11
Nickel and compounds	Plating for corrosion control	12
Perchloroethylene	Degreaser	13
Toluene	Paints	14
Trichloroethane	Parts cleaning, propellants	15
Trichloroethylene	Degreaser, parts cleaning	16
Xylene	Paints	17

3.7. Documentation. Hazardous waste generators and operators of TSDFs are required to maintain specific records and to submit specific reports regarding hazardous waste generation, accumulation, transportation, disposal, employee training, and pollution prevention. Generally, a record must be maintained at each step in the life cycle of a hazardous waste from initial determination to final disposal. Additionally, any unusual activity that takes place during that life-cycle, such as a spill or release, must also be documented. Installations must keep Air Force, state, and Federal officials informed through reports submitted to those agencies at specified intervals. Individual states may require that additional records and reports be maintained and submitted.

3.7.1. EPA Identification Number. Each hazardous waste generator, transporter, and operator of a TSDF must have a current EPA identification number. The environmental manager obtains the EPA ID number for the entire installation. [40 CFR § 262.12, § 263.11, and § 264/265.11]

3.7.2. State Reporting Requirements. State reporting and recordkeeping requirements may vary from the Federal requirements. Each installation must develop a process for identifying and complying with its state requirements.

3.7.3. Analysis and Test Records. Each generating activity, the environmental manager and bioenvironmental engineering services must keep records of any test results, waste analysis, or other determinations made to help characterize waste for at least five years from the date the waste was last sent for treatment, storage, or disposal. The record of waste analysis is attached to the hazardous waste profile sheet during turn-in. [40 CFR § 262.40(c)]

3.7.4. Hazardous Waste Profile Sheet. A copy of the hazardous waste profile sheet for each waste stream must be retained by the generating activity for five years in a separate hazardous waste file. The environmental manager and bioenvironmental engineering services will also maintain copies of all hazardous waste profile sheets.

3.7.5. Hazardous Waste Stream Inventory. The installation's hazardous waste stream inventory must be kept current and maintained by bioenvironmental engineering services and the environmental manager.

3.8. Work Information Management System - Environmental Subsystem (WIMS-ES). WIMS-ES is a subsystem of the Civil Engineer's WIMS computer system and is designed to allow the user to report data in compliance with the policies outlined in AFPD 32-70,

Environmental Quality. It is used to track and report environmental information to comply with statutory, regulatory, and administrative requirements. The information and data reported by the user can be transferred daily between installations, MAJCOMs, and the Air Staff. Consult AFI 32-7002, *Environmental Information Management System*, for guidance and procedures.

3.8.1. **WIMS-ES Hazardous Waste Module.** The hazardous waste module is used to track hazardous waste from cradle to grave. There are five kinds of records within the module:

- Hazardous Waste Management Overview Record (one per base)
- Waste Stream Record (one per waste stream)
- Container Record (one per container)
- Record of Disposal (ROD) (one per manifest)
- Disposal Site Record (one per disposal site used)

3.8.1.1. There are other records and reporting requirements in WIMS-ES which impact hazardous waste management, in the Release Reporting, Pollution Prevention, and Training modules. Personnel who update and maintain WIMS-ES data, usually in the environmental flight, must have a complete understanding of the system and data collection requirements.

Table 3.8. Typical Wastes Generated at Air Force Installations.

Generating Activity Type	Characteristic Waste ¹ D-list				Listed Waste ^{1,2}		
					Non-Specific Wastes	Discarded, Off-Spec, and Residues ³	
	Ignitable (D001)	Corro-sive (D002)	Reactive (D003)	TCLP	F-list	P-list (Acute)	U-list
Corrosion Control:							
• Spent paint removers, cleaning solvents, paint thinners	✓				✓		
• Contaminated paint removers				✓			
• Spray booth filters, sweepings, waterfall sludge	✓			✓	✓		
Vehicle Maintenance:							
• Spent paint removers, cleaning solvents, paint thinners, wiping rags	✓				✓		
• Contaminated paint removers							
• Solvent contaminated crank case and hydraulic oils				✓	✓		
• Waste oil (see notes)							
• Caustic cleaners		✓					
• Battery acid		✓					

Table continued on next page.

Table 3.8. Continued.

Generating Activity Type	Characteristic Waste ¹ D-list				Listed Waste ^{1,2}		
					Non-Specific Wastes	Discarded, Off-Spec, and Residues ³	
	Ignitable (D001)	Corrosive (D002)	Reactive (D003)	TCLP	F-list	P-list (Acute)	U-list
Munitions Management: <ul style="list-style-type: none"> Expired shelf-life munitions, unexploded range munitions, other munitions and explosives intended for disposal 			✓				
Non-Destructive Inspection: <ul style="list-style-type: none"> Solvents, penetrants, paint removers, organic cleaners, wiping rags Paint removers, cleaning solvents, paint thinners Contaminated paint removers 	✓ ✓			✓	✓ ✓		
Laundry: <ul style="list-style-type: none"> Dry-cleaning solvent, spent perchloroethylene, trichlorotrifluoroethane, petroleum solvents, still bottoms, spent filter cartridges, filter muck 	✓				✓		
Aircraft Maintenance Functions (Flightline, Munitions, Inspection, and Repair): <ul style="list-style-type: none"> Paint removers, cleaning solvents, finger print removers, carbon removers, paint thinners, wiping rags Contaminated paint removers Contaminated waste engine and hydraulic oils (with solvent) Contaminated waste engine and hydraulic oils (with leaded gas) Waste oil (see notes) Caustic cleaners and strippers Battery acid 	✓	✓ ✓		✓ ✓ ✓	✓ ✓		

Table continued on next page.

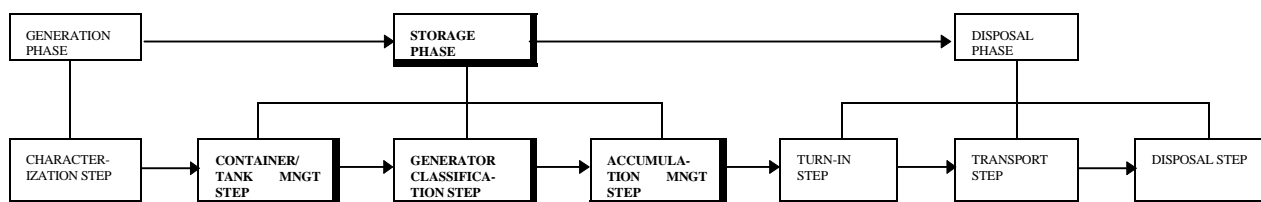
Federal Requirements Summary

Element	Standard
Overview of Subtitle C	40 CFR Part 260, Appendix I
Definitions: General (for Parts 260-266 & 268) Solid Waste Hazardous Waste	40 CFR § 260.10 40 CFR § 261.2 40 CFR § 261.3
Exemptions and Exclusions: Definitions Exclusions Conditionally Exempt Generators Recyclable Materials Residues in Empty Containers PCB Wastes	40 CFR § 261.3 40 CFR § 261.4 40 CFR § 261.5 40 CFR § 261.6 40 CFR § 261.7 40 CFR § 261.8
Representative Sampling Methods	40 CFR Part 261, Appendix I
References	40 CFR § 260.11
Characteristic Wastes: Ignitability Corrosivity Reactivity Toxicity	40 CFR § 261.21 40 CFR § 261.22 40 CFR § 261.23 40 CFR § 260.11 & 261.24
Listed Wastes: Non-specific Source (F-list) Specific Source (K-list) Discarded Commercial (P-list & U-list) Acute Hazardous Waste	40 CFR § 261.31 40 CFR § 261.32 40 CFR § 261.33 40 CFR § 261.31 to 261.33
Mixtures	40 CFR § 261.3
Waste Analysis and Recordkeeping Analysis and Test Records	40 CFR § 268.7(a) & 262.11 40 CFR § 262.40(c) 40 CFR § 264/265.13
EPA Identification Number: Generator Transporter Interim Status/Permitted Facility	40 CFR § 262.12 40 CFR § 263.11 40 CFR § 264/265.11

Table continued on next page.

Federal Requirements Summary

Element	Standard
Land Disposal Restrictions:	
Definitions	40 CFR § 268.2
Dilution Prohibited	40 CFR § 268.3
Notification of Restricted Waste	40 CFR § 268.7(a)(1)
Certification for Land Disposal	40 CFR § 268.7(a)(2)
Exemption	40 CFR § 268.7(a)(3)
Generator Treatment of Waste	40 CFR § 268.7(a)(4)
Documentation	40 CFR § 268.7(a)(5) to (a)(7)
Lab Packs	40 CFR § 268.7(a)(8) & (a)(9)
Recycled Waste for Small Quantity Generators	40 CFR § 268.7(a)(10)
Characteristic Waste Special Rules	40 CFR § 268.9
Solvent Waste	40 CFR § 268.30
Dioxin-Containing Wastes	40 CFR § 268.31
California List Wastes	40 CFR § 268.32
First Third Wastes	40 CFR § 268.33
Second Third Wastes	40 CFR § 268.34
Third Third Wastes	40 CFR § 268.35
Ignitable and Corrosive Wastes	40 CFR § 268.37
Treatment Standards Applicability	40 CFR § 268.40
Constituent Concentrations in Waste Extract (CCWE Table)	40 CFR § 268.41
Technology-Based Standards	40 CFR § 268.42
Constituent Concentrations in Waste (CCW Table)	40 CFR § 268.43
Storage Prohibitions	40 CFR § 268.50

Chapter 4**HAZARDOUS WASTE STORAGE****(CONTAINER MANAGEMENT, GENERATOR CLASSIFICATION, AND ACCUMULATION MANAGEMENT)**

4.1. Overview. As hazardous waste is being generated and characterized, it must be properly stored. The Storage Phase, which is the second Phase of the hazardous waste life-cycle (see Figure 4.1), has three steps: container/tank

management, generator classification, and accumulation management. Container/tank management includes selecting the proper containers and tanks to accumulate and transport hazardous waste, and the proper handling

and storing of each. Generator classification is determining the type of generator for each AF installation, based on the quantity of hazardous waste and acute hazardous waste generated each month. Generator classification determines specific storage requirements in the accumulation management step. Accumulation management includes selecting and designing the proper site(s) for accumulation of the hazardous waste.

4.2. Container Management. Hazardous waste must be stored in EPA approved containers or tanks.

4.2.1. Container Selection. Since hazardous waste most likely be transported in the container in which it is collected and stored, select the proper hazardous waste container based on the DOT Hazardous Materials Table listed at 49 CFR § 172.101 (see table 4.1). Hazardous materials description and proper shipping names are listed in alphabetical order. In selecting the proper container, the user searches the table for the hazardous material that generates the hazardous waste and identifies the packaging requirements. Column 7 of the table refers to special provisions for packaging and transportation (see table 4.1). Column 8 of the table identifies the specific packaging requirements for bulk and non-bulk packaging found under 49 CFR Part 173 (see table 4.2). See chapter 5 for an explanation on the proper shipping name.

4.2.1.1. For example, if the waste generated is spent sulfuric acid, look up "sulfuric acid, spent" in the Hazardous Materials Table. Column 7 lists the following special provision codes: A3 and A7 (aircraft requirements); B2, B83, and B84 (bulk packaging); N34 (non-bulk packaging); and T9 and T37 (inter-modals). After reviewing the special provision codes, the only one which affects our container selection is N34: "Aluminum construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material."

4.2.1.2. Column 8(b) of the hazardous materials table identifies the authorized non-bulk packaging listed at 49 CFR § 173.202. Reviewing this paragraph shows multiple combination and single container types that can be used for spent sulfuric acid, except for aluminum, which is prohibited by the special provision in column 7.

4.2.2. Specification Packaging Versus Performance-Oriented Packaging. DOT has moved from detailed construction specification packaging to performance-oriented packaging to compete with international shipping. This section of Chapter 4 is based on the latest edition of Title 49, which includes performance-oriented packaging (HM-181) requirements. The previously issued hazardous materials table (in effect on 30 September 1991), which specifies DOT specification containers, can still be used until 1 October 1996, unless the hazardous

waste is poisonous by inhalation, an explosive, or an infectious substance.

4.2.3. Container Condition. Most hazardous waste containers on Air Force installations are 55-gallon drums. All containers storing hazardous waste must be in good condition. Good condition means there should be no severe rusting, no sharp-edged creases or dents, no bulging heads caused by overpressuring a container (usually from overfilling), and no severe structural defects. If a container is not in good condition or begins to leak, the hazardous waste must be immediately transferred to another container or overpacked in a salvage drum. Containers with pools of hazardous waste on the top must be decontaminated or overpacked. [40 CFR § 264/265.171]

4.2.4. Container Opening. Follow proper procedures when opening, filling, and handling a container. Use bung wrenches to open a closed (non-removable) head drum. Removable head drums are opened by loosening the nut on the retaining ring, removing the retaining ring, and then removing the drum head. If the material in the drum is combustible or flammable, spark-proof wrenches (made from bronze or aluminum) should be used to prevent accidental ignition of the waste due to sparks. Slowly loosen the bung or retaining ring to allow for any pressure buildup to dissipate. [40 CFR § 264/265.173]

4.2.5. Container Filling. Do not overfill containers; fill to 90% of capacity. For example, only fill a 55-gallon drum to 50 gallons. Liquids expand in containers as the temperature increases. The pressure created by the expansion of the liquid in a completely filled container causes bulging heads and damages the integrity of the container. Bulging containers also create a safety hazard for personnel adding waste to or handling containers. Use a funnel in the bung to fill closed head containers. This will ensure that all waste is poured into the container and does not spill on the top of the container. After filling, the funnel should be removed and the container closed. If the funnel has any hazardous waste residues remaining, the residues should be rinsed into the container, or the funnel placed in a suitable closed hazardous waste accumulation container. Keep containers closed unless adding or removing waste. To prevent improper mixing, containers must be kept in a secured area. [40 CFR § 264/265.173 and 49 CFR § 173.24(h)]

4.2.6. Container Handling. Handle drums and other containers with equipment designed for the task. Secure containers to pallets before moving pallets. Use drum carts designed for the container types to reduce the likelihood of dropping a container during handling. Never balance drums on the forks of a forklift or tow motor. Do not stack drums more than two high. Drums containing flammable liquids should not be stacked. Do not allow the movement

Figure 4.1. Storage Phase of Hazardous Waste Life-Cycle.

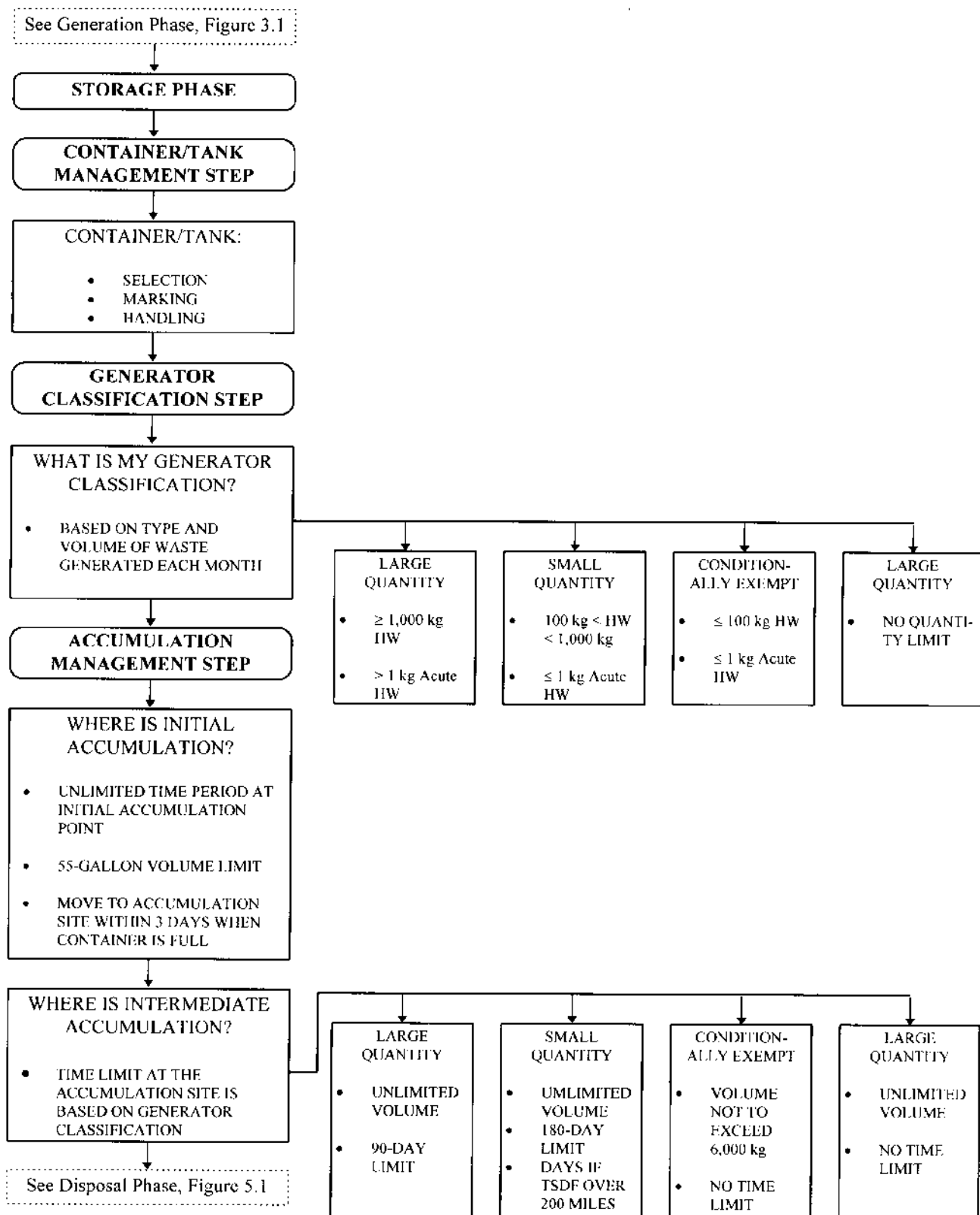
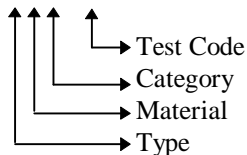


Table 4.1. Sample Hazardous Materials Table and Column Explanation.

HAZARDOUS MATERIALS TABLE (49 CFR § 172.101)													
Symbols	Hazardous materials descriptions and proper shipping names	Hazard class or Division	Identification Numbers	Packaging Group	Label(s) required (if not excepted)	Special provisions	(8) Packaging authorizations (§ 173 ***)			(9) Quantity limitations		(10) Vessel stowage requirements	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	Excep-tions (8A)	Non-bulk pack-aging (8B)	Bulk pack-aging (8C)	Passen-ger aircraft or railcar (9A)	Cargo aircraft only (9B)	Vessel stow-age (10A)	Othe-stowage move-ments (10B)
D	Hazardous waste, solid, n.o.s. <i>Naphtha petroleum</i>	I II	NA 3077 UN1255	III I II	CLASS 9..... FLAMMABLE LIQUID FLAMMABLE LIQUID	B54... .. T8 T8	155 150 150	213 201 202	241 243 242	No limit.... J L S L ...	No limit 30 l. 60 l.	A E B	
	Sulfuric acid, spent	R	UN1832	II	CORROSIVE	A3, A7, B2, B83, B84, N34, T9, T27	None	202	242	Forbidden	30 l.....	C.....	14
COL #	COLUMNS (1) - (10) INFORMATION												
1	Symbols which identify certain requirements in special situations.												
2	Identifies the proper shipping name.												
3	Identifies the numerical hazard class and/or division.												
4	Identifies the hazard identification number. A number with the prefix "UN" is used for all international shipments. A number with the prefix "NA" can only be used in the United States and Canada.												
5	Identifies the Packing Group assigned. Packing Groups indicate a degree of danger. PG I is greatest; PG II is medium; and PG III is minor.												
6	Identifies the labels which must be applied to packaging.												
7	Identifies special provisions for packaging and transportation. Number Only - all types of packaging and all modes of transportation; A - air transportation; B - bulk packaging (containers with a maximum capacity greater than 450 liters (119 gallons) as a receptacle for a liquid, or greater than 400 kg (882 lbs) for a solid) except inter-modal (IM) portable tanks; H - Applies only to highway transportation; N - non-bulk packaging (containers with a maximum capacity equal to 450 liters (119 gallons) or less as a receptacle for a liquid; equal to 400 kgs (882 lbs) or less for a solid); R - rail transportation; T - inter-modal portable tanks; W - water transportation.												
8	Three columns identifying packaging requirements: (a) exception packaging for limited quantity and consumer commodity (ORM-D); (b) non-bulk packaging; (c) bulk packaging.												
9	Identifies restrictions for air transportation.												
10	Identifies stowage requirements for vessels.												

Table 4.2. Performance-Oriented Packaging Codes for Non-bulk Packaging.

Identification Codes for Non-bulk Packaging				
Types of Packaging		Material of Construction		Category of Packaging
1	drum	A	steel	For steel drums (1A), a "1" indicates a non-removable head drum (i.e., "1A1"); and a "2" indicates a removable head drum (i.e., "1A2").
2	wooden barrel	B	aluminum	Composite Packaging 2 capital letters are used in sequence in the second position of the code, the first indicates inner material and second is the outer packaging. Example: plastic receptacle in a steel drum is designated "6HA1."
3	jerrican	C	natural wood	
4	box	D	plywood	
5	bag	F	reconstituted wood	
6	composite packaging	G	fiberboard	Combination Packaging
7	pressure receptacle	H	plastic	Only the code number for the outer packaging is used.
Example: UN 1A1 / Y 1.4/ 150 / 84 		L	textile	Test Performance Standard meets
		M	paper, multi-wall	X - PG I, II and III tests Y - meets PG II and III tests Z - only meets PG III tests
		N	metal (other than steel or aluminum)	
		P	glass, porcelain or stoneware	

of vehicles such as trucks, fork lifts, POV's, etc., in or near the container storage area unless loading or unloading. If containers must be stored outdoors, store them in an area protected from precipitation, whenever possible.

4.2.7. Containers with Ignitable or Reactive Waste.

Containers accumulating ignitable or reactive waste must be located at least 50 feet away from (inside) the installation property boundary. These containers must also be kept away from sparks, open flames, extreme heat, or other sources of ignition. Grounding and bonding may be required for flammable wastes. [40 CFR § 264/265.17 and 264/265.176]

4.2.8. **Empty Containers.** All empty chemical and waste containers must be responsibly managed to prevent contamination of the environment from residues and to comply with EPA and DOT regulations. A properly managed empty drum may be exempt from hazardous waste regulations. A container or an inner liner removed from a container that held hazardous waste is classified as

empty and is not regulated as a hazardous waste if the following conditions are met:

- All waste that can be removed by common methods has been accomplished; and
- Less than one inch remains in the bottom; or
- No more than 3% of the total capacity by weight remains for containers less than or equal to 110 gallons; or
- No more than 0.3% of the total capacity by weight for containers greater than 110 gallons.

4.2.8.1. Acute hazardous waste containers are considered empty when the container or inner liner is free of product by proper triple rinsing or cleaning, or the inner liner is removed. Hazardous waste compressed gas containers are empty when container pressure approaches atmospheric pressure. [40 CFR § 261.7 and 49 CFR § 173.29]

4.2.9. **Marking Hazardous Waste Containers for Accumulation.** Each container must be marked with the words "Hazardous Waste" and with the date initial

accumulation began, or when the volume limit was met for initial accumulation points (see paragraph 4.5.1). Containers should also be marked with a unique container identification number assigned by the accumulation site manager once the accumulation time limit starts. It is recommended that the waste stream contents be marked on the container. All marking should be large enough (one to two inches) to be seen from a distance. [40 CFR § 262.34(a)(2)(3) and (c)]

4.2.10. Container Inspection. All containers must be inspected at least weekly for potential release problems. [40 CFR § 264/265.174]

4.3. Tank Management. Hazardous waste stored in tanks must meet very specific requirements due to the large volume of hazardous waste in tanks that could be released during an incident. Basically, tank systems must be properly designed and installed, have adequate corrosion protection, employ secondary containment, be capable of detecting releases of hazardous waste, be operated to prevent releases, and be inspected according to the requirements. For existing tank systems less than 15 years old which do not have secondary containment, the installation must conduct an assessment of the tank to ensure the tank is not leaking and is fit for use. The assessment must be conducted by an independent, qualified professional engineer and must be properly documented. The assessment to ensure the tank system is adequately designed and has the strength and compatibility to hold the hazardous waste must consider the following:

- 4.3.1. Design standards, if available, according to which the tank and ancillary equipment were constructed;
- 4.3.2. Hazardous characteristics of the wastes that have been or will be handled;
- 4.3.3. Existing corrosion protection measures;
- 4.3.4. Documented age of the tank system, if available (otherwise estimate the age of the tank); and
- 4.3.5. Results of a leak test, internal inspection, or other tank integrity examination. [40 CFR § 262.34, and 40 CFR Part 265, Subpart J]

4.4. Generator Classification. There are three categories of generators based upon the type and volume of hazardous waste an installation generates (determined during hazardous waste quantification) and accumulation time: large quantity generator, small quantity generator, and conditionally exempt small quantity generator. As the volume of hazardous waste generated increases, so does the level of regulation placed upon the generator. Although different shops and activities within the installation (known as generating activities) generate hazardous waste, the **installation as a whole** is classified as a **single generator**.

4.4.1. Large Quantity Generator. A large quantity generator either produces 1,000 or more kilograms (kg) of

hazardous waste per month (approximately 265 gallons or 2,200 lbs) **OR** produces 1 kg or more of acute hazardous waste per month. As a large quantity generator, the installation can accumulate an unlimited volume of hazardous waste for up to 90 days. [40 CFR § 262.34(a) and (c)]

4.4.2. Small Quantity Generator. To be classified as a small quantity generator, the installation must generate less than 1,000 kg but more than 100 kg (approximately 25 gallons or 220 lbs) hazardous waste **AND** generates 1 kg or less of acute hazardous waste per month. If either of the quantities is exceeded, the installation would be classified as a large quantity generator. A small quantity generator may accumulate a volume of 6,000 kg of hazardous waste for up to 180 days. The time is extended to 270 days if the TSDF is 200 or more miles away. [40 CFR § 262.34(d) and (e)]

4.4.3. Conditionally Exempt Small Quantity Generator. As a conditionally exempt small quantity generator, the installation must produce no more than 100 kg of hazardous waste per month and less than 1 kg of acute hazardous waste (or 100 kg of soil, waste, or debris from an acute hazardous waste spill clean up) per month. Any time these quantities are exceeded, the conditionally exempt small quantity generator immediately becomes a small quantity generator. The conditionally exempt small quantity generator is exempt from many of the RCRA requirements. Any installation that believes it fits into this category must carefully research and document their decision making process. Conditionally exempt small quantity generators must treat and dispose of their hazardous waste in approved hazardous waste TSDFs or in facilities authorized to manage municipal or industrial solid waste. [40 CFR § 261.5]

4.4.4. Permitted Storage Facilities. If a large quantity generator or small quantity generator exceeds their waste accumulation times (90 days for large quantity generator; 180 or 270 days for small quantity generator) without a time extension from the EPA, they are considered an operator of a storage facility. They must apply for a permit (40 CFR Part 270) and operate under interim status standards (40 CFR Part 265). Once they receive their Part B permit, they operate under permitted standards (40 CFR Part 264) and OSHA Standard 29 CFR 1910.120(p). [40 CFR § 262.34(b) and (f)]

4.4.4.1. Hazardous waste TSDFs are subject to a permitting system that strives to ensure safe operation. Under this permitting system, facilities must meet general standards for proper waste management and requirements specific to the individual facility. Facilities that store hazardous waste, except for hazardous waste generators that accumulate hazardous waste in accordance with the time limitations noted above, must obtain a Part B permit for their storage activities. At Air Force installations, storage facilities are typically either operated by one of the Air Force organizations on-base, such as the civil

engineer squadrons, or by DRMO. Storage may occur in either tanks or containers. Due to land disposal restrictions, hazardous waste may not be stored for over one year.

4.5. Accumulation Management. Accumulation management includes three different periods of accumulation: initial accumulation at the initial accumulation point, temporary or interim accumulation at the accumulation site, and extended storage at permitted storage facilities.

4.5.1. Initial Accumulation (Satellite) Point. Generally, an initial accumulation (satellite) point is an accumulation area close to the generating activity. Accumulation continues at an initial accumulation point until 55 gallons of hazardous waste or 1 quart of acute hazardous waste is collected. Once the 55-gallon or 1-quart limit is reached, the generating activity must transfer the hazardous waste container to an accumulation site within three days. At that time a generator is required to comply with all applicable RCRA requirements with regard to 40 CFR § 262.34(a). The 90-day storage period begins as soon as the three-day period has expired and the excess amount becomes subject to 40 CFR § 262.34(a) requirement. Some states do not recognize initial accumulation points and consider the 90-day limit to begin when the first drop of hazardous waste is placed into the container. [40 CFR § 262.34(c)]

4.5.1.1. Containers must be kept in a secure area to prevent accidental mixing of wastes and to maintain the validity of the container's contents without costly analysis. A system which provides security and secondary containment is recommended. Basic requirements for fire protection, worker safety and health, and reducing environmental harm should be considered in the location of an initial accumulation point.

4.5.2. Accumulation Site. When the generating activity is ready to transfer their hazardous waste from the initial accumulation point, the hazardous waste is transferred to the accumulation site, a centralized location where wastes from several generating activities are placed for up to 90 days for large quantity generators, 180 or 270 days for small quantity generators. Due to the inherent risks associated with large volumes of hazardous waste, it is imperative that consideration be given to the design, selection, and management of the accumulation site. [40 CFR § 262.34]

4.5.2.1. The accumulation site selection should be one that minimizes the threat of the hazardous waste to both human health and the environment in the event of a release of hazardous waste or hazardous waste constituents. The following factors should be considered in the selection of the accumulation site:

4.5.2.1.1. EPA and state location and design requirements;

4.5.2.1.2. Fire protection, worker health and safety, public health and safety, and environmental (ecological) requirements and issues;

4.5.2.1.3. Space for waste segregation requirements;

4.5.2.1.4. Liability for hazardous waste clean up; and

4.5.2.1.5. Sufficient area for containers that hold ignitable or reactive wastes to provide at least 15 meters (50 feet) from (within) the installation's property line.

4.5.2.2. Once the accumulation site has been selected, consideration must be given to design of the container systems. The EPA does not require impermeable bases or containment systems at accumulation sites used for container storage for large quantity generators and small quantity generators; however, many states do, and impermeable bases or containment systems must be provided for permitted storage facilities. Considerations for the design of 90-day accumulation sites for containers include the following.

4.5.2.2.1. Provide an impervious surface free from cracks and gaps, treated with a sealant to prevent spills from contacting the ground. Containers should not be placed on dirt, sand, gravel, or grass surfaces.

4.5.2.2.2. Locate accumulation sites away from any floor drains that lead to sanitary or storm water sewers.

4.5.2.2.3. Provide a containment system with a capacity to either contain the volume of the largest container or ten percent of the volume of all containers, whichever is greater.

4.5.2.2.4. Slope the base of the containment system to a sump so liquids resulting from leaks, spills, or precipitation are drained and removed, unless containers are elevated.

4.5.2.2.5. Prevent run-on into the container area, or provide a containment system with enough excess capacity so any run-on will be contained along with the largest spill capacity.

4.5.2.2.6. For incompatible wastes, provide segregated containment by using either separate containment areas, by means of separately diked areas, or by sloped containment to separate sumps. [40 CFR § 265.177]

4.5.2.2.7. Erect a fence with a means to control entry around the accumulation site and post signs "Danger--Unauthorized Personnel Keep Out" (in English and any other language predominant in the area) that can be seen from any access and are large enough to be read from 25 feet.

4.5.2.2.8. Cover containers accumulated outdoors with a roof or with a tarpaulin to protect volatile materials from direct sunlight, causing expansion and pressure build-up in the container which could lead to container failure and hazardous waste release.

4.5.2.2.9. Ventilate confined areas (enclosed storage buildings) used for the accumulation of hazardous wastes. A build up of hazardous waste vapors can present a serious health hazard for toxic hazardous waste or fire ignition hazard for flammable hazardous waste.

Electrical exhaust systems must meet the National Electrical Code if flammable hazardous waste is present. Exhaust systems must take into consideration whether the hazardous waste vapors are heavier or lighter than air. Ensure exhausted air does not reenter work areas.

4.5.2.2.10. Place drums on pallets to allow for ease of removal when full.

4.5.3. **Accumulation Site Logs.** Logs are maintained at accumulation sites to track each hazardous waste container (see figure 4.2). Logs include a base designated number for each waste stream using the Air Force hazardous waste process codes (see table 3.6) and a base designated sequential number for each container; the container's contents (waste stream); the accumulation start date; date the container is full; the date the container was transferred or turned in; and the container's disposition (shipped to DRMO or TSDF).

4.5.4. **Inspection Records.** Containers and tanks at accumulation sites must be inspected either daily (tanks) or weekly (containers). An inspection checklist should be developed to ensure consistency in all inspections and incorporated into the hazardous waste management plan. It is also recommended that containers at initial accumulation points be inspected daily. The EPA does not require inspection records or logs at accumulation sites; however many states do, and they are required at permitted facilities. Inspection records/logs should include the date, inspector's name, and actions taken to remedy any problems identified. Inspection records must be maintained for at least three years from the date of each inspection. [40 CFR § 262.34(a) & (d), and Part 265 Subparts I/J]

4.5.4.1. Sometimes DRMO will accept accountability of the hazardous waste once it is turned in, but not take physical custody. This is normally when the installation has the most nearly conforming storage (to 40 CFR Parts 264/265), when there is no available storage space at DRMO, or when the DRMO is staffed by one person and it becomes a safety issue. When DRMO accepts the turn-in of hazardous waste in-place, the generating activity or accumulation site with physical custody of the waste is responsible for required periodic inspections and care and protection of the hazardous waste until it is disposed of by the DRMO. If waste is accumulated in-place in excess of 90 days (180/270 days for small quantity generators) the generating activity must obtain the necessary permit for a TSDF.

4.5.5. **Selection of Initial Accumulation Point Managers and Alternates.** Each generating activity assigns a primary and alternate initial accumulation point manager for the waste streams they generate. Managers are normally the shop supervisors and their assistants for shops that generate hazardous waste. Initial accumulation

point managers and alternates are responsible for the following activities:

4.5.5.1. Providing safe equipment and locations for initial accumulation points;

4.5.5.2. Coordinating each location with accumulation site manager, environmental manager, ground safety, fire protection, and bioenvironmental engineering services;

4.5.5.3. Ensuring hazardous waste accumulation complies with Federal, state, and local hazardous waste management requirements; and

4.5.5.4. Ensuring all personnel that handle hazardous waste at the initial accumulation points receive annual training.

4.5.6. **Selection of Accumulation Site Managers and Alternates.** Each generating activity which has an accumulation site must appoint an accumulation site manager and alternate. Site managers must accomplish the following:

4.5.6.1. Assume overall responsibility for management of the hazardous waste accumulation site;

4.5.6.2. Coordinate requirements and problems with environmental manager, ground safety, fire protection, and the bioenvironmental engineering services;

4.5.6.3. Ensure accumulation site has appropriate warning signs;

4.5.6.4. Ensure accumulation site has appropriate spill/release response kit and personnel are properly trained in its use;

4.5.6.5. Ensure approved fire extinguishers are readily available if flammable hazardous waste is stored in the accumulation site and personnel are properly trained in their use;

4.5.6.6. Perform and document inspections of the accumulation site; inspections must be performed weekly for containers and daily for tanks;

4.5.6.7. Ensure that hazardous wastes are collected and stored in approved containers and tanks;

4.5.6.8. Maintain hazardous waste containers in proper condition, e.g., no pitting, no sharp edge creases or dents, no material defects, no bulging heads;

4.5.6.9. Ensure that containers are kept closed except when they are being filled;

4.5.6.10. Ensure that all hazardous wastes from their assigned initial accumulation points are placed in their accumulation site;

4.5.6.11. Ensure that hazardous waste is not placed in a container that is not properly marked;

4.5.6.12. Ensure that hazardous waste containers are properly painted/marked before they receive any hazardous waste;

4.5.6.13. Ensure that the placement of a new hazardous waste container in its accumulation site is accompanied by a simultaneous entry of the placement in the accumulation site log;

Figure 4.2. Accumulation Site Log and Instructions.

Accumulation Site Log and Instructions					
Container #	Waste Stream	Start Date	Date Full	Date Transferred	Shipped To
AB-001-037	Sand blasting waste	5 Jul 94	5 Jul 94	1 Oct 94	DRMO
AB-001-038	Sand blasting waste	6 Jul 94	6 Jul 94	1 Oct 94	DRMO
AB-001-039	Sand blasting waste	10 Jul 94	10 Jul 94	1 Oct 94	DRMO
FC-001-143	Contaminated JP-4	8 Aug 94	30 Aug 94	1 Oct 94	Ajax Recycling
PO-002-057	Spent PD 680	9 Aug 94	15 Sep 94	5 Nov 94	DRMO
AC-004-10	Solvent contaminated rags	3 Sep 94	15 Oct 94	5 Nov 94	DRMO

Container # - Use waste stream number assigned (AB-001, PO-002, etc.) and consecutive number for each container (-001, -002, -003, etc.). The waste stream number is used as a cross reference tool for linking waste container, turn-in document, sample and chain-of-custody forms, hazardous waste inventories, and other appropriate records. *Example: AB-001-037 is the 37th drum of paint chips generated by an abrasive blasting process.*

Waste Stream - Enter a brief description of the hazardous waste in each container.

Start Date - If waste is added to a container at an accumulation site, enter the date the first volume of waste was added to the container. If a 55-gallon container is used at an initial accumulation point and subsequently moved to the accumulation site, enter the date the container was filled to capacity. If the container is less than full, enter the date the container was moved to the accumulation site.

Date Full - Enter the date the container was filled to capacity.

Date Transferred - Enter the date the container was transferred to DRMO or shipped to a TSDF.

Shipped To - Enter location to which container was shipped.

4.5.6.14. Ensure the storage of hazardous waste in the accumulation site does not exceed 90 days (180/270 days for small quantity generators);

4.5.6.15. Ensure initial hazardous waste management training is provided to personnel before they handle hazardous waste; coordinate training with environmental manager and ensure proper documentation;

4.5.6.16. Ensure annual hazardous waste management refresher training is provided to all personnel who handle hazardous waste and document the training;

4.5.6.17. Properly annotate the AF Form 2005 and DD Form 1348, complete and update DRMS Form 1930 prior to processing the hazardous waste for turn-in and disposal;

4.5.6.18. Implement remedial action when a hazardous waste spill/release is detected; stop all other actions and contain spill to best of ability based on unit capability and resources; initiate base response by immediately notifying appropriate agency; and

4.5.6.19. Maintain all hazardous waste documentation and correspondence for a minimum of 3 years.

4.5.8. Closing an Accumulation Site. When closing an accumulation site, the installation must control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of hazardous waste and constituents, and minimize the need for further maintenance. This includes removing or preventing the escape of any hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous

waste decomposition products to the ground, surface water, or the atmosphere. During closure, all contaminated equipment, structures, and soil must be properly disposed of or decontaminated. [40 CFR § 262.34(a), § 265.111, and § 265.114]

4.6. TSDF Documentation Requirements. If the installation operates a permitted storage facility, there are specific documentation requirements.

4.6.1. Operating Record. Each permitted and interim status facility must maintain an operating record which contains the following: specific information (description and quantity) on all hazardous wastes stored at the facility; the date they were processed; their location; waste analysis records; incident summaries and reports; monitoring, testing or analytical data; waste minimization documentation; and records of land disposal use. [40 CFR § 264/265.73 & 74]

4.6.2. Unmanifested Shipment Report. Permitted and interim status TSDFs may accept unmanifested waste from conditionally exempt small quantity generators if certification that the generator qualifies for exclusion can be obtained. If certification cannot be obtained, the facility operator must report the situation to the EPA within 15 days of receiving the waste. The report includes the following: name, address and EPA ID number; date the waste was received; name, address and EPA ID number of the generator and transporter; description and

quantity of the waste; method of treatment or storage; certification signed by the operator of the installation; and to the extent known, a brief explanation why the wastes were not properly manifested. [40 CFR § 264/265.76]

4.6.3. New Tank Assessment. TSDFs with new tank systems storing hazardous waste must obtain a written assessment review certified by an independent, qualified, registered professional engineer. The purpose is to certify that the tanks and the installation meet the required EPA standards. For permitted TSDFs, this assessment must be submitted to the EPA Administrator with the Part B permit. [40 CFR § 264.192]

4.6.4. Groundwater Assessment Record. TSDFs that include surface impoundments, waste piles, land treatment units or landfills must monitor groundwater,

record the results of all analyses, evaluations and assessments, and report results to the EPA Administrator in accordance with applicable schedules. [Subpart F of 40 CFR Parts 264 & 265]

4.6.5. Semi-Annual Inspections of Corrective Action Progress Reports, New Cathodic Protection Systems, Vent Emissions, and Annual Inspections of TSDFs.

There are specific requirements for permitted and interim status facilities concerning clean-up activities, corrosion protection for underground tanks, reporting of air emissions, groundwater monitoring, and inspections. Personnel who work at a permitted storage facility should review the Federal requirements listed below for TSDFs to ensure they are in compliance.

Federal Requirements Summary

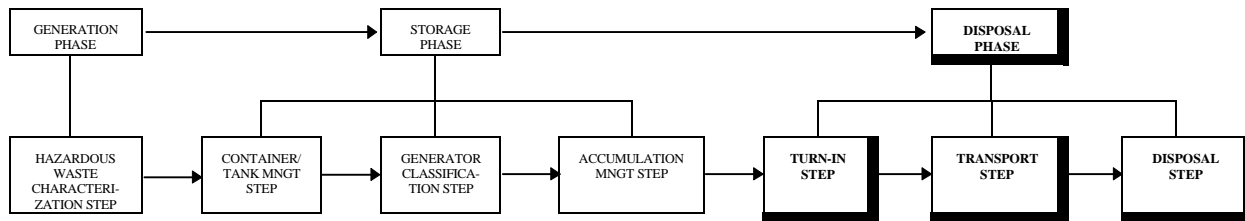
Large Quantity (LQ); Small Quantity (SQ); Conditionally Exempt Small Quantity (CEQ); Permitted Storage Facility (PSF)					
Element	Standard	LQ	SQ	CEQ	PSF
Generator Classification:					
Large Quantity	40 CFR § 262.34(a)(c)	✓			
Small Quantity	40 CFR § 262.34(d)(f)		✓		
Conditionally Exempt	40 CFR § 261.5			✓	
Permitted Facility	40 CFR § 262.34(b)(f)				✓
Accumulation Times:					
90 days	40 CFR § 262.34(a)	✓			
180 days	40 CFR § 262.34(d)		✓		
270 days	40 CFR § 262.34(e)		✓		
Time Extensions	40 CFR § 262.34(b)(f)	✓	✓		
Over Quantity Limits	40 CFR § 261.5(e)(g) 40 CFR § 262.34(b)(f)	✓	✓	✓	
Containers:	40 CFR 264/265 Subpart I				
Condition	40 CFR § 264/265.171	✓	✓		✓
Compatibility	40 CFR § 264/265.172 49 CFR § 173.24(e)	✓	✓	✓	✓
Opening	40 CFR § 264/265.173	✓	✓		✓
Filling	40 CFR § 264/265.173 49 CFR § 173.24(h)	✓	✓	✓	✓
Handling	40 CFR § 264/265.173	✓	✓		✓
Ignitable, Reactive, or Incompatible Wastes	40 CFR § 264/265.17, 176 & 177 49 CFR § 173.24	✓	✓	✓	✓
Empties	40 CFR § 261.7 49 CFR § 173.29	✓	✓	✓	✓
Marking	40 CFR § 262.34(a)(c)	✓	✓		✓
Inspections	40 CFR § 264/265.174	✓	✓		✓
Exceptions for Shipment - Hazardous Waste:					
Open Head Drums	49 CFR § 173.12(a)	✓	✓	✓	✓
Lab Packs	49 CFR § 173.12(b) 40 CFR § 264/265.316	✓	✓	✓	✓
Reuse of Packaging	49 CFR § 173.12(c)	✓	✓	✓	✓
General Packaging Requirements	49 CFR § 173.24 & 173.24a	✓	✓	✓	✓
Salvage Drums	49 CFR § 173.3(c)	✓	✓	✓	✓

Table continued on next page.

Large Quantity (LQ); Small Quantity (SQ); Conditionally Exempt Small Quantity (CEQ); Permitted Storage Facility (PSF)					
Element	Standard	LQ	SQ	CEQ	PSF
Reuse of Packaging	49 CFR § 173.28(b)(6)	✓	✓	✓	✓
Tank Systems:	40 CFR § 262.34 40 CFR 264/265 Subpart J				
Assessing Existing Tank Integrity	40 CFR § 264/265.191	✓			✓
New Tanks	40 CFR § 264/265.192	✓			✓
Release Detection and Containment	40 CFR § 264/265.193	✓			✓
General Operating Requirements	40 CFR § 264/265.194	✓			✓
Inspections	40 CFR § 264/265.195	✓			✓
Leaks or Spills/Unfit Tanks	40 CFR § 264/265.196	✓			✓
Ignitable or Reactive Wastes	40 CFR § 264/265.198	✓			✓
Incompatible Wastes	40 CFR § 264/265.199	✓			✓
Waste Analysis	40 CFR § 265.200	✓			✓
Small Quantity Generators	40 CFR § 265.201		✓		
Accumulation Site Log (<i>**There is no direct reference to maintaining accumulation site logs. It is Air Force policy to maintain this log to document that all hazardous waste containers are properly handled within the allotted time frame.</i>)	40 CFR § 262.34**	✓	✓		✓
Inspection Records (<i>**There is no EPA requirement for initial accumulation points or 90-day accumulation sites to maintain inspection records/logs. It is, however, Air Force policy to maintain such records to document that required inspections are being conducted. Also, certain states may require maintenance of inspection records.</i>)					
Containers	40 CFR § 264/265.174	✓	✓		✓
Tanks	40 CFR § 264/265.195	✓	✓		✓
Corrective Action Progress	40 CFR § 264.100				✓
Cathodic Protection Systems	40 CFR § 264/265.75 & .195				✓
TSDF Vent Emissions	40 CFR § 264.1036				✓
TSDFs:					
Operating Records	40 CFR § 264/265.73 & 74				✓
Unmanifested Shipments	40 CFR § 264/265.76				✓
New Tank Assessment	40 CFR § 264.192				✓
Groundwater Monitoring	40 CFR § 265.94				✓

Chapter 5

HAZARDOUS WASTE DISPOSAL (TURN-IN, TRANSPORT, AND DISPOSAL)



5.1. Overview. The final phase of the hazardous waste life-cycle is disposal, involving the three steps of turn-in, transport, and disposal. As seen in figure 5.1, the disposal phase begins when the generating activity is ready to turn in their hazardous waste. Turn-in is the transfer of authority to properly dispose of the hazardous waste, usually to DRMO. Once turned in, the hazardous waste is transported to a RCRA-permitted facility for ultimate disposal. The disposal phase requires a coordinated effort by all installation personnel including the generating activity, the environmental flight, bioenvironmental engineering services, accounting and finance, contracting, and the disposal agent, normally DRMO. The entire disposal phase of the hazardous waste life-cycle is guided by documentation which must be completed throughout the turn-in, transport, and disposal steps. Transportation is a critical link of the hazardous waste life-cycle management process. Correspondingly, it is highly regulated and includes packaging, marking, labeling, loading, placarding, and a manifest system for tracking the hazardous waste, especially when transported off-installation, (including along public highways on the installation). While some installations operate RCRA-permitted storage facilities, most Air Force installations rely on DRMO to provide this service. This chapter presents a description and explanation of how to properly complete the paperwork required for turn-in of hazardous waste to your installation's storage facility. It also addresses the considerations and requirements for the transportation of hazardous waste.

5.2. Turn-in. Hazardous waste must be turned in by large quantity generators and small quantity generators before the end of the allowed accumulation time limit, unless a one-time written extension has been granted by the state authority or regional EPA. All transfers and turn-ins of hazardous waste to storage facilities must be conducted under the direction of and processed through the installation environmental flight. This procedure prevents unnecessary analyses and handling of the waste, and provides for an accurate accounting of fund

expenditures. Hazardous waste generating activities are responsible for ensuring the wastes they generate are properly characterized, accumulated, stored, and disposed of in accordance with the base hazardous waste management plan. The generating activity's responsibility for compliance does not end until the required documentation has been completed and the physical transfer of the waste to the permitted facility has been completed. Hazardous waste generating activities are required to ensure four primary documents are completed for disposal of hazardous waste: hazardous waste profile sheet (see Chapter 3), AF Form 2005, DD Form 1348-1, and the hazardous waste manifest.

5.2.1. Weighing Hazardous Waste. The generating activity and environmental manager must ensure its wastes are accurately weighed following established installation procedures.

5.2.2. Proper Shipping Description. All packaging, marking, labeling, loading, and placarding is driven by the DoT proper shipping description found in the Hazardous Materials Table (49 CFR § 172.101) for each hazardous waste stream. If the hazardous waste is not properly identified, serious environmental and financial consequences could result as the waste is transported and disposed of. The first place to look for the proper shipping description is Part II, block 5, of the hazardous waste profile sheet. See table 4.1 for an explanation on how to use the Hazardous Materials Table. [49 CFR § 172.200 - 205]

5.2.2.1. The DoT proper shipping description consists of the following information in this order: the word "Waste", if not already part of the proper shipping name; the proper shipping name; hazard class or division; the UN or NA identification number; and the packing group (PG I, II, III). Example: "Waste Acetone, 3, UN 1090, PG II". [49 CFR § 172.200-205]

5.2.3. AF Form 2005, Issue/Turn-In Request. This Air Force document begins the actual turn-in process when the generating activity is ready to dispose of the hazardous waste. The hazardous waste generating activity completes AF Form 2005 (see figure 5.2 and table 5.2) then provides

it to base supply for further processing. The environmental manager advises the generating activity on completion of the above information. Copy 1 of this form is retained in base supply, and the remaining copies are given to the generating activity.

5.2.4. DD Form 1348-1, DoD Single Line Item Release/Receipt Document (Used as Disposal Turn-in Document). Once base supply receives the AF Form 2005, it will prepare and provide to the generating activity a DD Form 1348-1 with the information listed in figure 5.3 and table 5.3. The generating activity enters the date/time in block 13 and prints/signs name in blocks 14 or 15 (original and duplicate) of the disposal turn-in document. Base supply keeps copy 5 of the completed form and gives the remaining copies to the generating activity. Correctly completed samples of disposal turn-in documents are maintained in the operating records at DRMO.

5.2.5. Environmental Manager's Certification. The hazardous waste generating activity delivers the disposal turn-in document to the environmental manager who certifies the following: that disposal funds are available; that the hazardous waste profile sheet and the DD Form 1348-1 are properly completed; and that a hazardous waste manifest (covered later in this chapter) has been prepared if the waste must be shipped off-installation. In no case should the disposal turn-in document be certified if funds are not available to the environmental manager. Funds are allocated through accounting and finance office by either the military interdepartmental purchase request, or the interfund billing system.

5.2.6. DRMO Acceptance. The generating activity takes the certified disposal turn-in document to the storage facility (with the hazardous waste) and retains two copies for base records after acceptance of the waste by the operator of the storage facility. The generating activity retains one copy and returns one copy of the disposal turn-in document, signed by the storage facility operator, to the environmental flight. If the storage facility operator does not accept the waste, the environmental flight must be immediately notified. The generating activity receives two copies of the DD Form 1348-1 after DRMO accepts the waste and signs the DD Form 1348-1. One copy is retained in the generating activity's hazardous waste file. The other copy is sent to the environmental flight.

5.3. Transportation. All waste must be properly packaged, marked, labeled, loaded, placarded (if required), and manifested before being shipped along any public highway, on- or off-installation. Actual movement of the hazardous waste to the disposal pick-up point is the responsibility of the generating activity. DRMO may require the installation to retain physical custody of the waste while DRMO administratively manages disposal or reclamation of the waste. The generating activity consults with the base transportation officer and environmental

flight to ensure that all hazardous waste transportation requirements are met.

5.3.1. Marking for Transportation. Containers with liquid capacity less than 119 gallons (450 liters), a net mass less than 882 pounds (400 kg) and maximum capacity less than 119 gallons for solids, and a water capacity equal to or less than 1,000 pounds (454 kg) for gas, are considered non-bulk packaging. Non-bulk packaging has special EPA and DoT marking requirements.

5.3.1.1. Markings must be printed in English directly on the surface of the package or on a label, tag, or sign securely affixed to the package. The words listed in figure 5.4 must be displayed on all non-bulk packages. They must be displayed on a background of sharply contrasting color, must be unobscured, and must be durable. Markings must also include the proper shipping name, UN or NA identification number, and name and address of consignee (receiving agent) or consignor (shipping agent). This information must match the hazardous waste manifest. The proper shipping name on the package does not have to include the word "Waste" if a marking such as shown in figure 5.4 is used on the package. Many of the marking requirements can be satisfied by the use of a pre-printed marking such as shown in figure 5.5. [40 CFR § 262.32, 49 CFR § 172.301 and 304]

5.3.1.2. If the non-bulk package contains a hazardous substance (whether a single substance, mixture, or solution) in its reportable quantity, the letters "RQ" must be displayed with the proper shipping name, along with one of the following:

5.3.1.2.1. Technical name of the hazardous substance from Appendix A to the Hazardous Materials Table;

5.3.1.2.2. The EPA hazardous waste number; or

5.3.1.2.3. The letters "EPA", followed by the appropriate waste characteristic (ignitability, corrosivity, reactivity, or Toxicity), or the appropriate "D" number. [49 CFR § 172.324]

5.3.1.3. The technical name, in parentheses, must be associated with the proper shipping name for all "n.o.s." or generic shipping names. [49 CFR Parts 172.203(k) and 172.301(b)]

5.3.1.4. If the non-bulk package is to be transported by water, a "Marine Pollutant" mark may be required. [49 CFR § 172.322]

5.3.1.5. Non-bulk combination packages (inner packages secured by an outer package) containing liquids must be marked with package orientation arrows on two opposite sides of the package. [49 CFR § 172.312]

5.3.1.6. Packages containing a poisonous gas (Division 2.3) or a poisonous liquid subject to the "Poison-Inhalation Hazard" shipping paper description must be marked with the words "Inhalation Hazard" in association with the required labels. Those materials subject to this provision can be identified by the special provisions, column 7, of the Hazardous Materials Table. "Poison-

Inhalation Hazard" materials have special provision codes 1 to 6 and 13. [49 CFR Parts 172.101, and 172.313]

5.3.1.7. Polychlorinated biphenyls (PCBs) have a special 6" x 6" mark, as shown in figure 5.6, which must be used on each package and on all four sides of the transport vehicle. [40 CFR § 761.40 and 761.45]

5.3.2. **Labeling.** Labels provide warnings to personnel handling hazardous wastes and emergency responders as to the potential harms and incompatibilities of individual packages. Labels, approximately 4" x 4" diamond shaped, square-on point, provide their warning through color, pictograms (symbols at top of label), hazard classes or divisions (numbers at bottom of label), and words in the center of label. Refer to the Hazardous Materials Table and 49 CFR 172, Subpart E for more information on labeling. [40 CFR § 262.31]

5.3.2.1. Labels must be affixed to the package near the proper shipping name marking. Labels must be affixed to a background of contrasting color or set off by dotted or solid line outer borders. The required labels are prescribed in column 6 of the Hazardous Materials Table (49 CFR § 172.101). The appropriate hazard class or division number is displayed in the lower corner of the primary hazard label only (the primary hazard label is the first one listed in column 6 and matches the hazard class or division listed in column 3). Hazard class or division numbers are not displayed on subsidiary hazard labels (any other label listed in column 6). Packages which require more than one label must display those labels within six inches of each other. [49 CFR Parts 172.101(g), 172.402, and 172.406]

5.3.2.2. When compatible hazardous wastes are placed in the same outer container, such as an overpack, a label for each hazard class or division must be shown within six inches of each other. [49 CFR § 172.404]

5.3.2.3. Combustible liquids in non-bulk packaging are not required to be labeled. [49 CFR § 172.101(g) and § 172.400]

5.3.3. **Loading.** Hazardous wastes must be properly and safely loaded onto vehicles for transportation to facilities for treatment, storage or disposal. To prevent hazardous chemical reactions during the transportation, personnel should follow the "*Segregation and Separation Chart of Hazardous Materials*", 49 CFR § 177.848. General loading safety precautions include the following.

5.3.3.1. All hazardous wastes which are flammable, compressed gases, corrosives, poisonous, or radioactive must be secured against movement within the vehicle during transportation. Containers with valves and other fittings must be protected to minimize likelihood of damage and release. [49 CFR § 177.834(a)(g)]

5.3.3.2. Never load hazardous wastes on pole trailers. [49 CFR § 177.834(b)]

5.3.3.3. Never smoke, and keep fire sources away, while loading or unloading hazardous wastes containing

explosives, flammable liquids, flammable solids, oxidizers, or flammable gases. [49 CFR § 177.834(c)(d)]

5.3.3.4. Make sure the vehicle hand brake is set and other precautions are in place to prevent vehicle movement before loading or unloading all hazardous wastes. [49 CFR § 177.834(e)]

5.3.3.5. Use tools designed for loading and unloading the specific type of containers. [49 CFR § 177.834(f)]

5.3.3.6. Cargo tanks must be attended by a qualified person at all times during loading and unloading. [49 CFR § 177.834(i)]

5.3.3.7. Follow bonding and grounding procedures when loading flammable liquid wastes into containers or cargo tanks. [49 CFR § 177.837]

5.3.4. **Placarding.** Placards are the Department of Transportation's (DoT) method of aiding emergency response personnel at a release of hazardous materials during transportation. Placards are found on freight containers, tank cars, cargo tanks, and portable tanks. A placard is a 10 3/4 inch diamond-shaped square-on point. Placards identify the primary hazards associated with the contents of the vehicle or container to which they are affixed. Secondary hazards may not be identified (exception: materials which present a "Poison-Inhalation Hazard" must be placarded "Poison" along with primary hazard; materials which have a secondary hazard of being dangerous when wet must also carry a "Dangerous When Wet" placard along with the primary hazard placard.) Placards may or may not be required, depending on the specific hazard class/division and/or the quantity involved. Tables 5.4 and 5.5 outline the general placarding requirements, but there are several exceptions to the rules. For example, DoT exempts domestic shippers of Class 9 materials from having to display the "Miscellaneous" placard and a "Combustible" placard is not required for combustible liquids transported in non-bulk packages. [40 CFR § 262.33 and 49 CFR § 172.504]

5.3.4.1. When required, placards are placed on all four sides of a vehicle (truck, trailer, rail car, van, car). Portable tanks less than 1,000 gallons and bulk packages less than 640 cubic feet only require placards on two opposite sides. Placards provide the following information: hazard class/division number, UN or NA identification number (if allowed), hazard color (red, yellow or green, etc.), and pictogram (symbols for poison, radioactive, etc.). Placard information must be legible, visible from the direction it faces, clear of all obstructions, at least 3 inches away from other markings, and secured to read horizontally. [49 CFR § 172.512, 172.514, and 172.516]

5.3.4.2. Each installation must ensure the proper placards are provided to the transporter for each hazardous waste shipment. Each installation must have a supply of the appropriate placards on-hand which can be offered to transporters hauling hazardous waste. It is the

transporter's responsibility to replace any placards which are damaged or lost during transport. [49 CFR § 172.506]

5.3.4.3. The placards in use before HM-181 went into effect can be used for highway shipments of hazardous waste until 1 October 2001 (see tables 5.4 and 5.5). [49 CFR § 171.14(c)(2)]

5.3.4.4. Placarding applies to off-installation movements of hazardous waste including along public highways located on an installation.

5.3.5. **Hazardous Waste Manifest.** The hazardous waste manifest serves three purposes: as a tracking device to trace shipments of hazardous waste, by identifying who is responsible for the waste from its point of generation through ultimate disposal; providing information during transportation emergencies; and for recordkeeping and reporting. Information needed for the biennial report is obtained from the manifest. The hazardous waste manifest (or state equivalent) can be obtained through each individual state's hazardous waste regulatory agency or through commercial forms suppliers.

5.3.5.1. A hazardous waste manifest is required for all off-installation shipments of hazardous waste, unless the installation is classified a conditionally exempt small quantity generator; or as a small quantity generator and the waste is reclaimed under a contractual reclamation agreement. A hazardous waste manifest is required for:

5.3.5.1.1. All hazardous waste transported from off-site generating activities to an installation's permitted or interim status TSDF (such as the storage facility operated by DRMO or the installation itself);

5.3.5.1.2. Hazardous waste shipments from the installation's permitted or interim status TSDF to an off-site TSDF; and

5.3.5.1.3. Waste shipments within an installation boundaries requiring travel along public highways on the installation. [40 CFR § 262.20(a), § 263.10(b), § 263.20(a), and § 260.10]

5.3.5.2. The hazardous waste manifest and continuation sheet (see figures 5.7 and 5.8) is the shipping document that identifies the hazardous waste generator, transporter(s), and TSDF, and describes the contents of the waste shipment. When a waste shipment leaves the installation, the manifest must be completed through block 17 (see tables 5.6 and 5.7), "Transporter 1". One copy of this "open" manifest must be kept on file at the installation which generated the waste and the remaining copies must be provided to the transporter. The "open" manifest accompanies the transporter to the designated TSDF. The transporter may also deliver the hazardous waste to additional transporters who will move the waste to the designated TSDF, as long as they are identified on the hazardous waste manifest or continuation sheet. After acceptance of the waste, the owner or operator of the TSDF must sign the manifest signifying receipt of the shipment. This signed (or "closed") manifest is then returned to the waste generator to complete the paper trail.

If the transporter is unable to deliver the hazardous waste to the designated TSDF or to an alternate facility designated on the manifest, the installation must designate another permitted facility or instruct the transporter to return the waste. [40 CFR § 262.20 and 263.20]

5.3.5.3. Enough duplicate copies of the manifest should be completed by the hazardous waste generator in order to provide the generator, each transporter, and the designated TSDF with one copy for their records, plus an additional copy to be returned to the generator. Each "closed" manifest must be retained by the environmental flight for at least five years from the date the waste was accepted by the initial transporter. [40 CFR § 262.22]

5.3.5.4. Many states have adopted their own versions of the manifest, requiring generators to submit manifest copies to the state, along with additional information. To identify the appropriate manifest, determine whether the installation's host state and the state to which the hazardous waste is being sent require the use of a state manifest.

5.3.5.4.1. If the shipment is being sent to a state (consignment state) which has a state manifest, it must be used.

5.3.5.4.2. If the consignment state does not require a state manifest, but the state where the installation (generator state) is located has a manifest, it must be used.

5.3.5.4.3. If neither the consignment state nor the generator's state requires the use of its own state manifest, then the uniform hazardous waste manifest may be used. The Air Force prints the uniform hazardous waste manifest and copies may be obtained from base publications. [40 CFR § 262.21]

5.3.5.5. The installation commander or designee (DRMO or environmental manager) has responsibility for completing and signing the generator section of the hazardous waste manifest. The generating activity is responsible for knowing manifesting procedures and providing support to complete the form. There are three parts to a hazardous waste manifest. The top portion identifies the organizations handling the waste, the middle portion identifies the shipment, and the bottom portion contains the signatures of the individuals who handled the waste. [40 CFR § 262.23 and 263.20]

5.3.5.6. After receipt of hazardous waste accompanied by a hazardous waste manifest, a permitted facility must accomplish the following.

5.3.5.6.1. Sign and date each copy of the manifest to certify that the hazardous waste covered by the manifest was received.

5.3.5.6.2. Immediately give the transporter at least one copy of the signed manifest.

5.3.5.6.3. Within thirty days after delivery, send a copy of the manifest to the waste generator.

5.3.5.6.4. Retain at the facility a copy of each manifest for at least five years from the date of delivery.

5.3.5.6.5. Note any significant discrepancies on each copy of the manifest. [40 CFR § 264/265.71 and 264/265.72]

5.3.6. Emergency Contact and Emergency Response Information. DoT regulations require hazardous waste shippers to provide a 24-hour emergency response telephone number on the manifest for use in the event of an emergency involving the hazardous waste shipment. The telephone number must be the number of the person who is knowledgeable of the hazards and characteristics of the material being shipped and has comprehensive emergency response information and accident mitigation information for that material, or has immediate access to a person who possesses such knowledge and information. The telephone number must be monitored at all times the material is in transport or storage incidental to transport. A generator could use an installation's emergency reporting telephone number, as long as the organization answering the calls is capable of, and responsible for, providing detailed information concerning the hazardous waste and has received current emergency response information on the waste. [49 CFR Part 172, Subpart G]

5.3.7. Notification and Certification Required by the Land Disposal Restrictions. All hazardous wastes are subject to land disposal restrictions, as discussed in Chapter 3. A land disposal restriction notification and/or certification must accompany the hazardous waste manifest to notify the disposal facility of the applicable treatment standards or prohibition levels for California listed wastes. The notification and/or certification must include the following information, most of which can be found on the hazardous waste profile sheet for each waste stream:

- Manifest number associated with the shipment of hazardous waste;
- Waste analysis (testing) data or statement of knowledge as to whether each waste is or is not restricted;
- EPA hazardous waste number(s) (*also known as waste codes*) assigned, listed and characteristic, contained within the waste stream;
- Treatment subcategory(s) of the hazardous waste number(s) (such as "Oxidizer" under waste code D001);
- Treatability categories (e.g. wastewater or non-wastewater); and
- Treatment standard or method of reference (enter numerical treatment standard or the five letter treatment code(s) from 40 CFR 268.42, Tables 1, 2, or 3; or CFR section where the applicable treatment standard(s) appear in lieu of listing each treatment standard). [40 CFR § 268.7]
- Exception: *All treatment standards must be listed for each constituent or waste groups in F001-F005 spent solvents, multi-source*

leachate (F039), California listed wastes (40 CFR § 268.32), and for underlying hazardous constituents in D001 and D002 wastes listed under 40 CFR § 268.37.

5.3.7.1. If the waste can be land disposed without further treatment, a certification statement listed at 40 CFR § 268.7(a)(2)(ii) must be added to the notification to the disposal facility. [40 CFR § 268.7(a)(2)(ii)]

5.3.7.2. If a lab pack is being shipped, describe whether it contains a waste identified in Appendix IV or V to 40 CFR 268. Note: *Lab packing for turn-ins to the DRMO may not be done by the generating activity but may be done by the DRMO contractor.* [40 CFR § 268.42(c) and 40 CFR § 264/265.316]

5.3.7.3. The installation commander, environmental manager, and DRMO (if applicable) shall coordinate the completion of a land disposal notification and/or certification, regardless of whether or not the waste will be land disposed.

5.3.8. On-Installation Transportation. While there are no specific RCRA regulations that govern the on-installation transportation of hazardous waste, it is important to ensure that any waste transported on-installation is transported in a manner that will not endanger the health of installation personnel or the environment. Actual movement of the hazardous waste to the disposal pick-up point is the responsibility of the generating activity. Base transportation should be contacted to determine the exact method and mode of transporting hazardous waste on base.

5.3.8.1. The generating activity must ensure that containers are in good condition. Prior to turning in hazardous waste, each container should be inspected by the generating activity and the environmental flight to ensure that it is in good condition and suitable for transportation. The container should have no leaks and no accumulation of liquid on the top head. Also, there should be no serious corrosion, dents, sharp creases, or bulging heads. If the container has a leak or if it is not in good condition, the waste in the drum must be transferred to a container in good condition or the container must be overpacked in a salvage drum. [40 CFR Parts 264/265, Subpart I; 49 CFR § 173.24, 173.24(a), and 177, Subpart B]

5.3.9. Off-Installation Transportation. When transported off-installation (including along public highways on-installation) the hazardous waste must be transported by a carrier who has authorization from the EPA or the State. Drivers must have a current Commercial Drivers License (CDL). See 49 CFR Part 383. When a generating activity is involved with off-base movement of hazardous waste, the generating activity must consult with the base transportation office and environmental flight to ensure that all DoT, EPA, and OSHA transportation requirements are met. Installations have the option of establishing a single office for managing off-base transport of hazardous waste. They should consider their waste transportation volume, contracting support, and compliance with transportation requirements related to health and safety as well as emergency response (EPA/OSHA/DoT) training. The following criteria should be considered when selecting a hazardous waste transporter.

5.3.9.1. Does the company have an EPA identification number for hazardous waste transportation? Ask the

transporter for their identification number, call the state environmental agency (or EPA Regional office) to validate the number, and confirm that the number has not been revoked, terminated, or suspended. Alternatively, you could directly inquire of your state environmental agency if the company you are considering has a current EPA Identification Number.

5.3.9.2. Does the transporter have the proper vehicle and/or equipment to carry the HW? Container shipments typically require a type of flatbed truck (such as a closed trailer); if the installation requires hazardous waste to be removed from a tank, the transporter must be able to provide tank trucks. Evaluate the condition of the vehicles. Pay particular attention to the condition of truck tires, brakes, and other obvious safety matters which can be checked by observation or by simple operation of the truck. Evaluate the equipment carried by a transporter to facilitate the loading of the shipment and to respond to spills. A transporter with a flatbed truck carrying pallet jacks, dollies, and open head drums with fresh adsorbent and (sparkproof) shovels and whose truck has a hydraulic lift (if no loading dock is available) is better prepared and quite likely more capable of transporting your waste than a transporter with no loading or spill response equipment. A transporter with a tank truck who carries a vacuum pump and flexible hosing for evacuating a storage tank is preferred over one without such equipment.

5.3.9.3. Has the transporter been cited for any violations by EPA or DoT? Determine if there have been any significant violations for each potential transporter. The greater the number and severity of violations, the less the credence to have in a transporter. Contact both the EPA and DoT. EPA regulates transporters primarily in areas of manifest documentation and hazardous waste discharges. Contact the environmental agency in the state in which the transporter operates (or the regional EPA if the state does not have RCRA authorization) to identify any manifest-related violations and citations for inadequately responding to, reporting, or cleaning up a hazardous waste discharge.

5.3.9.4. If a transporter only carries hazardous waste within state boundaries (i.e., intrastate transportation), it is regulated by the state Department of Transportation in which the transporter operates. The enforcement branch of the state DoT primarily conducts and documents roadside inspections. Contact the state DoT to determine if a hazardous waste carrier has been found in violation of requirements relating to safety equipment and motor vehicle safety. The state DoT can also indicate if the transporter has been granted operating authority by the state, and if the insurance carrier for the transporter has provided certification of any state-required motor vehicle insurance.

5.3.9.5. A transporter that crosses state lines (i.e., interstate transportation) is subject to inspection by both state and Federal DoT requirements. When the Federal DoT inspects a transporter, an on-site inspection is conducted, during which driver log books, vehicle maintenance files, accident report files, incident (spill) report files, driver qualification files, and the transporter's driver training program are examined. Copies of the inspection reports and subsequent violations can be obtained by writing DoT at the following address: U.S. Department of Transportation, Attn: Freedom of Information Officer, 400 Seventh and D Street, SW, Washington, DC 20590, (202) 366-0534.

5.3.9.6. Does the transporter have the necessary permits to carry the waste interstate or intrastate? EPA does not require a permit for transporters to carry hazardous waste;

however most states have permit requirements.⁽²⁾ Additionally, some states require a permit for a vehicle to transport hazardous waste through their state. Determine if the transporter is permitted to operate in the state in which it is based by contacting the state DoT. Determine the route that your transporter will follow to the TSDF. If the route takes the transporter outside of the state in which it is based, call each state DoT to determine if a permit is required for a vehicle to haul hazardous waste through the state. Ask the transporter in which states it is permitted to operate to help determine if a transporter has the authority to carry hazardous waste interstate and if it is aware of state-specific permitting requirements.

5.3.9.7. Does the transporter have at least the required minimum amount of insurance? If a transporter is solely involved in intrastate transportation of small quantities of hazardous waste (i.e., less than 3,500 gallons), it is subject to state-specific requirements for insurance. Determine whether or not a transporter has minimum state-required coverage by contacting the Department of Transportation for the state in which the transporter is based. Alternatively, this information may be obtained by requesting the transporter to furnish you with a certificate of insurance. If there is any question regarding the validity of an insurance certification, the company issuing the certificate (and hence the policy) should be contacted. When a transporter is involved in interstate transportation of hazardous waste, it is required to maintain a minimum of \$1 million insurance. A transporter involved in carrying large amounts of hazardous waste (i.e., ³ 3,500 gallons) must maintain at least \$5 million insurance, regardless of whether the transporter is involved in intrastate or interstate commerce. A transporter can either contract with an insurance carrier or, under certain conditions, it can self-insure. Federal transportation regulations require that proof of financial responsibility must be maintained on-site with the transporter. Therefore, you can verify that a transporter has adequate insurance by requesting a copy of the transporter's MCS 90 form (if insured through an insurance company) or their MCS 82 form (if self-insured).

5.3.9.8. Would current or past customers recommend the transporter? To gauge the dependability, reliability, and competence of a transporter prior to contracting their service, contact past and present customers for their evaluation. Most transporters will gladly supply a list of customers, although that list may be biased towards favored customers. An alternate method to obtain the names and addresses of a transporter's clients is to obtain the manifest file for the transporter. This may be done if an on-site audit of the transporter is conducted, or by contacting the state environmental agency in the state from which the transporter is based and requesting a copy of the manifest file for the transporter. Note: although there is no Federal requirement under RCRA to file manifests with the appropriate state agency, many states have enacted hazardous waste management regulations that require the filing of manifests with the state.

5.3.9.9. What kind of and how much experience does the transporter have? Searching out past and present customers is one factor in the equation used to determine the experience of a hazardous waste transporter. Important to this consideration is the factoring in of other services that a transporter offers and the length of time a transporter has been in business. For example, a transportation firm that also provides emergency remediation services in the event of a release is an indication that the transporter can efficiently and effectively handle its own spills.

5.3.9.10. How much lead time is required before a shipment can be carried off-installation? Time plays a crucial role in the management of hazardous waste. Neither the state nor EPA will routinely make allowances for waste that remains on-site past the accumulation time limit (the state may grant a 30-day extension on a case-by-case basis). Determine the lead time, i.e., the amount of time required for a transporter to arrive at the installation after being notified that a shipment is ready. Ensure that the transporter is capable of reliably responding on the date required.

5.3.9.11. How much does the service cost? Cost should not be viewed as the most significant factor in selecting a hazardous waste transporter and its significance should be weighed in the light of all other factors discussed above. While hazardous waste transportation is a competitive industry, a relatively low price tag may translate into delaying of vehicle maintenance, reduction of the amount of emergency response equipment carried on-board, and the employment of marginally qualified drivers and technical assistance personnel - all of which decrease the factor of safety with which all transporters must operate. *When evaluating bids for hazardous waste transportation services, bids that are excessively low by comparison should be questioned and evaluated cautiously.*

5.3.9.12. Lists of transporters authorized to transport hazardous waste may be obtained from the host state environmental agency, the regional EPA office; or reference books commercially available that list hazardous waste transporters.

5.3.9.13. In granting an EPA identification number, the agency issuing the number is not attesting to the competency or capability of the transporter, it is only acknowledging that the company is registered to transport hazardous waste.

5.3.10. When hazardous wastes are shipped out by water or rail, the installation must follow the requirements of 40 CFR § 262.23 and § 263.20.

5.3.11. Hazardous Waste Imports and Exports. To export hazardous waste, the installation must follow the requirements of 40 CFR Part 262, Subpart E. To import hazardous waste, the installation must follow the requirements of 40 CFR Part 262, Subpart F.

5.4. TSDF Selection. Although DRMO is the primary hazardous waste disposal agent for DoD, there are times when an installation may have to contract for hazardous waste disposal independent of DRMO. They will follow normal Air Force procurement requirements for a service contract; but the selection criteria is extremely critical. Past performance of the contractor will be a major factor in the selection evaluation criteria. Each offerer should submit information demonstrating the following: successful completion of previous similar contracts; ability to perform the required services including possession of necessary permits, licenses, certificates of disposal, and equipment; employment of qualified personnel; and information on previous violations, fines, or penalties incurred by the offerer and its major corporate officers. The following criteria should be considered when selecting a TSDF.

5.4.1. Capability to Treat Wastes. Determining the appropriate TSDF begins first by knowing the EPA hazardous waste number for each waste to be shipped and determining which TSDFs are permitted to accept your hazardous waste. This determination can be made by writing or telephoning a TSDF and inquiring if the facility is permitted to receive waste with the hazardous waste numbers the installation generates.

Request a list of hazardous waste numbers for which the TSDF is permitted or contact the environmental agency of the state in which the facility is located, to obtain a list of hazardous wastes that the facility is permitted to accept.

5.4.1.1. When a hazardous waste manifest is signed, the Base Commander (or his designee) is certifying that the methods used by the TSDF to treat or dispose of the waste are the best available for minimizing the present and future threat of the hazardous waste to human health and the environment. The environmental flight (in cooperation with DRMO) should determine the best treatment or disposal method for each waste. While some wastes can be rendered non-hazardous by a only single method, there are a variety of treatment alternatives available for the majority of hazardous wastes. Evaluating each method and determining the installation's most practicable method may turn into a technically challenging, as well as labor-intensive task. Even though a hazardous waste is consigned to a TSDF, the waste generator retains legal responsibility for the waste. If the waste is mismanaged by the TSDF, EPA or the state can ultimately bring suit against the generator to remedy the problem (e.g., a generator can be sued to finance a clean-up action).

5.4.1.2. First consider recycling the waste or sending it to a TSDF that can recycle or reclaim the hazardous waste. If recycling or reclamation is not available, consider a facility that offers a method that is practical and available which achieves environmentally beneficial reductions of waste toxicity and/or mobility.

5.4.2. Permit Status. Confirm that the facility is a permitted or interim status TSDF and verify this with the state or regional EPA.

5.4.3. History of Violations. Every TSDF must be inspected by EPA or representatives of the state environmental agency at least once every two years; Federal and state owned or operated TSDFs must be inspected at least annually. As a result, there is a written record, which records each facility's status with respect to compliance with RCRA. Based on inspections, TSDFs are cited for violations of the law. The inspection report records are available to the public and should be reviewed prior to selecting a TSDF (as well as periodically while using the facility's services). Inspection reports and notices of violations can be obtained by submitting a written Freedom of Information Act request to the Freedom of Information Officer at the state or regional EPA.

5.4.3.1. When reviewing inspection reports and subsequent notices of violation, keep in mind that because of the enormity of hazardous waste management regulations with which a facility must comply, some paperwork violations that occur on an infrequent basis may be inevitable. And though excessive paperwork violations may signal a problem, more serious violations should be examined and evaluated carefully; serious violations may indicate serious problems with the facility.

5.4.3.2. A variety of other files available to the public can be used to help establish reliability and compliance status of a TSDF. Depending on the agency, there may be a file dedicated to enforcement actions, legal suits brought against the facility, and correspondence to and from agency officials, as well as the facility permit application itself.

5.4.3.3. In addition to the hazardous waste requirements of RCRA, a TSDF may also have to comply with the requirements of the Clean Air Act if there are any air emissions from the facility, the Clean Water Act if it discharges wastewater, and the Occupational Safety and Health Act's general industry standards.

A comprehensive history of compliance identifying all notices of violation, consent orders and agreements, and levied administrative, civil, and criminal penalties can be developed by contacting each state agency that administers the law (e.g., the state air quality division, state water quality division, and the state OSHA).

5.4.4. Condition of the Facility. This is best evaluated by conducting an on-site visit. Typically, TSDFs are happy to exhibit their storage facilities and structures, analytical instrumentation, disposal units, and treatment and processing equipment to present and potential customers. Such visits must often be scheduled in advance in order to arrange for a technically competent employee to be available to answer your questions.

5.4.4.1. When conducting a site visit, take note of the general housekeeping practices and appearance in the areas where the waste is off-loaded, stored, processed, treated, and disposed. Poor housekeeping and appearance may be an indication of poor or weak management or at the very least, may represent poor hazardous waste management practices. Look for potential safety hazards, condition of facilities and equipment, and availability and use of safety equipment. Be aware of detectable odors. Your decision to select a TSDF can be strongly influenced by the degree of order and concern for safety at the facility. Review the standards for TSDFs in 40 CFR 264 or 265 before the site visit to focus on the necessary requirements.

5.4.5. Liability Insurance. TSDFs are required to maintain liability insurance either through a carrier or through a self-insurance program and are also required to maintain up-to-date financial assurance for closure and post closure care as part of their Part B permit. Your decision to select a TSDF should be based partly on the extent of insurance coverage maintained by the facility, its overall financial status/credit rating, and the extent to which the contractual arrangements and their insurance policies will protect the Air Force from future liability.

5.4.6. Cost. Cost of treatment, storage, or disposal services must be evaluated but it should not be the only criterion upon which a TSDF is selected. According to Air Force policy, the installation Contracting Officer ensures that only qualified hazardous waste disposal contractors (not just low price bidders) are awarded contracts. Before the final selection, you should make an attempt to factor in all considerations presented above. The Contracting Officer should always consider the enormous costs associated with remedying the actions of an irresponsible or less than competent and capable TSDF. A minor savings up front can easily result in very large expenses later.

5.4.7. When the manifest is signed, the installation commander (or designee), is certifying that the methods used by the TSDF to treat or dispose of the waste are the best available for minimizing the present and future threat of the hazardous waste to human health and the environment. It is not the goal of EPA to force each installation to exhaustively search throughout the country and pay an unreasonable sum of money for any method of waste treatment, storage, or disposal. EPA allows the installation the flexibility to reasonably, yet defensibly, select the most practicable method.

5.4.8. A list of permitted and interim status TSDFs may be obtained from the state (or regional) environmental agency. The reference materials discussed in the note of table 5.8 can be reviewed to determine which facilities offer TSD services. In addition, during the first quarter of each year, McCoy and Associates publishes a directory of commercial hazardous waste

management facilities as part of one of the bimonthly issues of *The Hazardous Waste Consultant*. This can be obtained from McCoy and Associates at 13701 West Jewell Avenue, Suite 252, Lakewood, Colorado 80228.

5.4.9. Pre-Award Survey. A pre-award survey will be performed for all service contract solicitations, including a site visit to the proposed treatment or disposal site. Prior to award, the environmental manager will verify the permits held by the various treatment and disposal sites. Installations must obtain MAJCOM approval and justify the need for disposal of hazardous waste independent of the DRMO.

5.4.10. Quality Assurance. Hazardous waste contracts will be administered and monitored according to the quality assurance principles of AFMAN 64-108, *Service Contracts*. On-site, no-notice follow-up verification audits must be performed at least annually to verify wastes are handled and disposed of properly, from cradle-to-grave.

5.5. Forecasting Waste Disposal Requirements. The environmental manager should program for waste disposal funds based on the installation's hazardous waste stream inventory and the most recent contract disposal costs. The most recent contract disposal costs are available from the DRMO. The environmental manager ensures that all hazardous waste disposal is charged against the proper PE (XXX56F) and EEIC 53411 according to AFI 32-7001, *Environmental Budgeting*.

5.6. Transportation and Disposal Documentation. The recordkeeping requirements are summarized in table 5.8.

5.6.1. Manifest. Each generating activity, the environmental flight, and DRMO retain copies of the manifest for five years after shipment. [40 CFR § 262.23 and § 262.40(a)]

5.6.2. Exception Report. For large quantity generators, if the environmental manager does not receive a copy of the "closed" manifest from the designated TSDF within 35 days of the date the waste was accepted by the initial transporter, action must be initiated to track its location. If the "closed" manifest has not been received by the forty-fifth day, an exception report must be submitted to the EPA Regional Administrator. The report must include a copy of the manifest and a cover letter describing the efforts taken to locate the hazardous waste and the results. For small quantity generators, submit to the EPA Regional Administrator a copy of the manifest with a note stating that the manifest has not been received within 60 days of shipment. Exception reports are maintained for three years after mailed. [40 CFR § 262.40(c) and § 262.42]

5.6.3. Discrepancy Report. If the TSDF operator detects significant manifest discrepancies between the quantity or type of waste designated by the installation on the manifest, the TSDF operator must contact the generator and transporter by telephone to reconcile the discrepancy. If the discrepancy is not resolved within 15 days of the waste being received, the TSDF operator must submit a report to the EPA Regional Administrator. The report includes a letter describing the discrepancy and attempts made to resolve the discrepancy with the installation, and a copy of the manifest. Significant discrepancies are variations greater than 10% in weight, batch variations in the piece count, and any variation between the type of waste described on the manifest and the type received. [40 CFR § 264/265.72]

5.6.4. Land Disposal Certification. On the land disposal restriction notification, the generator notifies the TSDF in

writing of the appropriate treatment standards and any applicable prohibition levels. If the installation determines that the restricted waste can be land disposed without further treatment, they must submit a notice and a certification to the TSDF operator in Part 1 of the hazardous waste profile sheet stating that the waste meets the applicable treatment standards and prohibition levels. Notices and certifications must be retained for five years. [40 CFR § 268.7]

5.6.5. Biennial Reports. When hazardous waste is shipped off-site to TSDFs, or treated on-site, the installation environmental manager must submit biennial reports (EPA Form 8700-13A) to the EPA Regional Administrator by March 1st of each even numbered year. Copies of the report must be retained on file for three years and include the following: assigned EPA ID number; report year; EPA ID numbers, names and addresses of off-site TSDFs where waste was shipped; names and EPA ID number of each transporter used; description (EPA hazardous waste number), DoT class, and quantity of each waste shipped off-site; description of the waste minimization efforts taken; description of the changes in volume and toxicity of waste actually achieved compared to previous years; and certification signature. Generating activities must assist the environmental manager in developing this information through their hazardous waste documentation. (Note: Installations located in the states that are authorized to administer and enforce their own hazardous waste program in lieu of the Federal program must submit reports to the appropriate state regulatory agency at the required frequency (may be annual) rather than to the EPA Administrator.) [40 CFR § 262.40(b) and § 262.41]

5.7. Air Force Documentation Requirements.

5.7.1. Turn-in Documents. Each AF Form 2005, DD Form 1348-1, and hazardous waste profile sheet must be maintained by the generating activity, the environmental manager, and DRMO when the waste is turned in for disposal. They must be retained for five years from the date the waste was last sent for on-installation or off-site treatment, storage, or disposal.

5.7.2. Certification Letter. A letter identifying personnel eligible to certify hazardous waste disposal turn-in documents (DD Form 1348-1), must be on file at the servicing DRMO.

5.7.3. Purchase Request. The accounting and finance office obligates hazardous waste disposal funds based on validated requests from the environmental flight. The accounting and finance office must maintain records of the transaction either on AF Form 616, Fund Cite Authorization, or on the military interdepartmental purchase request, DD Form 448, Military Inter-Departmental Purchase Request, for overseas hazardous waste transactions.

5.7.4. M-15/GV912 Report. Part IV of the M-15 Report lists all hazardous waste transfers to the disposal agent processed by base supply. Each month base supply sends this report to the environmental manager who compares the information with the processed turn-in documents and billing statements. The report is then sent to the accounting and finance office with any required adjustments which must be made to the accounting records. Bioenvironmental engineering services should also receive a copy of the report.

Figure 5.1. Disposal Phase of Hazardous Waste Life-Cycle.

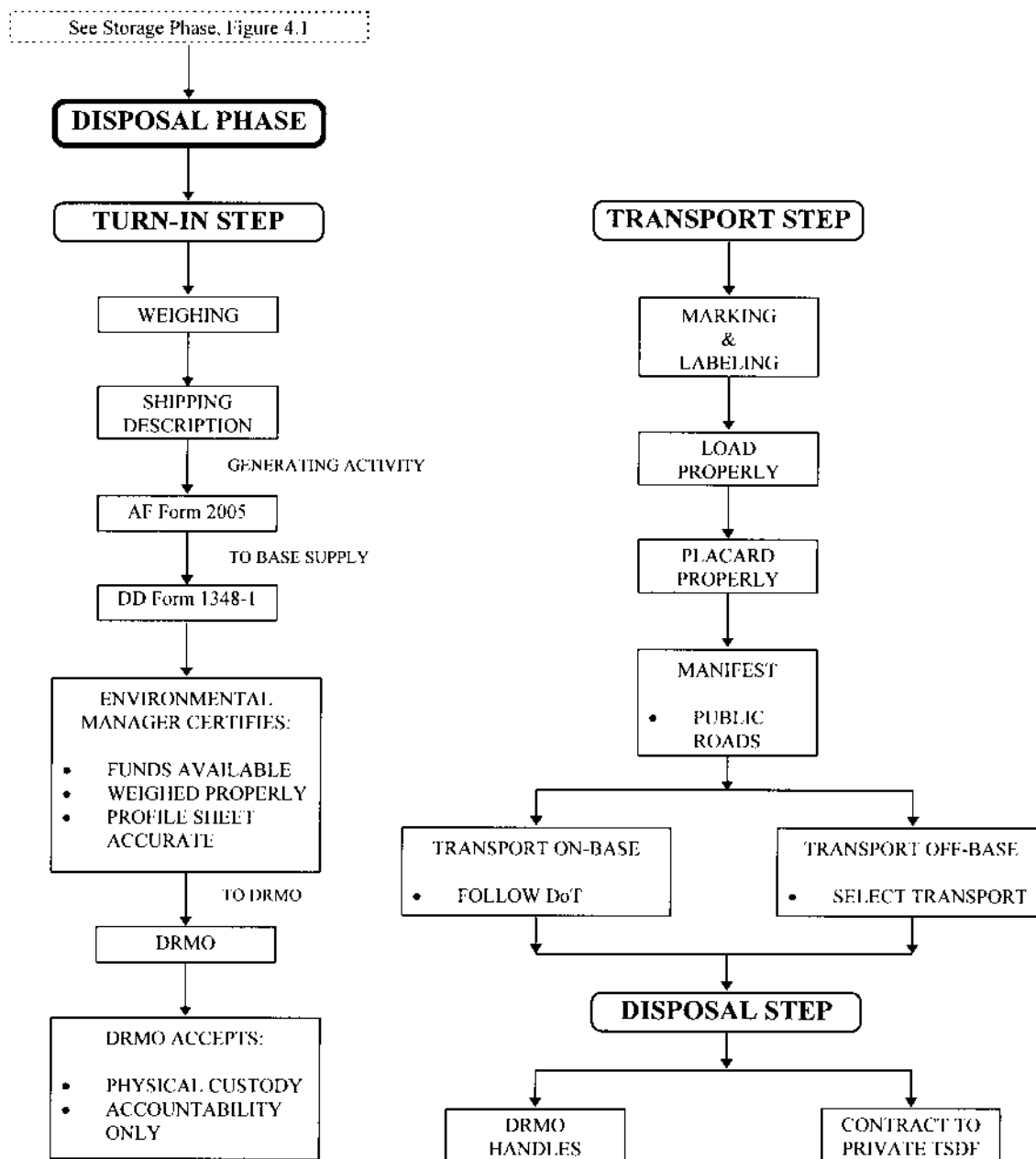


Table 5.1. Proper Shipping Description Guidelines.

Hazardous Materials Table (HMT), 49 CFR § 172.101, Subpart B⁽¹⁾	
<p>The basic shipping description has the following components:</p> <p style="text-align: center;">Acetone⁽¹⁾, 3⁽²⁾, UN 1090⁽³⁾, PG II⁽⁴⁾</p> <p style="text-align: center;"> (1) Proper Shipping Name (2) Numerical Hazard Class or Division (3) UN or NA Identification Number (4) Packing Group </p> <p style="text-align: right;">[49 CFR § 172.202]</p>	
Proper Shipping Name	
1.	<p>Use the hazardous materials description and proper shipping name entry that appears in column 2 of the Hazardous Materials Table in Roman (bold) type. <i>Italicized entries</i> are not proper shipping names.</p> <p style="text-align: right;">[49 CFR § 172.101(c)]</p>
2.	<p>Use the hazardous materials description and proper shipping name in the Hazardous Materials Table, column 2 (49 CFR § 172.101), that most appropriately describes the hazardous waste. Select the name in the following order:</p> <ul style="list-style-type: none"> • First: Technical name <ul style="list-style-type: none"> •• "1,1,1-Trichloroethane, 6.1, UN 2831, PG III" • Second: Generic (family) name <ul style="list-style-type: none"> •• "Alcohol, n.o.s., 3, UN 1987, III" "n.o.s." = "not otherwise specified." • Third: Application, use, or common name (e.g., paint or paint related material) <ul style="list-style-type: none"> •• "Paint, 3, UN 1263, PG II" • Fourth: Generic hazard class <ul style="list-style-type: none"> •• "RQ, Hazardous waste liquid, n.o.s. (Kepone), 9, NA 3082, III"
3.	<p>For hazardous wastes, add the word "waste" if not included in the proper shipping name.</p> <ul style="list-style-type: none"> • "Waste paint, 3, UN 1263, PG II" <p style="text-align: right;">[49 CFR § 172.101(c)(9)]</p>

Table continued on next page.

Table 5.1. Continued.

4.	<p>If the waste is not described on the DoT Hazardous Material Table by name or by its former use, the waste may be a mixture or solution of a hazardous material and one or more non-hazardous materials. Look up each waste component in the Hazardous Materials Table. If one or more of the components is not listed on the table in column 2, the waste is a mixture or solution of a hazardous material and one or more non-hazardous materials. For combinations of hazardous waste with non-hazardous items (such as water), select the name from the Hazardous Materials Table for the hazardous component of the waste and add the words "mixture" or "solution" after the proper shipping name as appropriate.</p> <ul style="list-style-type: none"> • A mixture is any combination of two or more chemical compounds or elements (solid or liquid). • A solution is a homogenous liquid mixture of two or more chemical compounds or elements that will not undergo any segregation under conditions normal to transportation (e.g., Hydrochloric acid mixed with water). • • "Waste Hydrochloric acid, solution, 8, UN 1789, II" <p style="text-align: right;">[49 CFR § 172.101(c)(10)]</p>
5.	<p>Determine if the material meets the description of more than one hazard class by referring to column 3 of the Hazardous Materials Table. For example, a mixture may be both a flammable liquid and toxic, or a flammable liquid and corrosive. If so, use the hazardous precedence list presented in 49 CFR § 173.2a to select a generic name for the material.</p> <ul style="list-style-type: none"> • "Alcohols, toxic, n.o.s., 3, UN 1986, I" • "RQ, Waste Flammable Liquids, Corrosive, n.o.s., 3, UN 2924, II (D001, D002)" <p style="text-align: right;">[49 CFR § 172.101(c)(12)(iii)]</p>
6.	<p>If the waste is a mixture of more than one hazardous material, determine if more than one DoT hazard class is specified. If not, use the name for the hazard class (see table at 49 CFR § 173.2) of the mixture as the proper shipping name preceded by the word "Waste" and followed by the letters "n.o.s."</p> <ul style="list-style-type: none"> • "Waste flammable liquids, n.o.s. (Contains acetone and xylene), 3 UN 1993, II" for a mixture of acetone and xylene would have a shipping name <p style="text-align: right;">[49 CFR § 172.101(c)(12)(iii)]</p>
7.	<p>When two or more hazardous materials are mixed in the waste, the proper shipping name is based on the hazard class(es) of the mixed items. If the mixture has more than one hazard class, use the hazard precedence prescribed in § 173.2a to select the appropriate hazard class or division, thus the proper shipping name.</p> <ul style="list-style-type: none"> • "Flammable liquid, corrosive, n.o.s., 3, UN 2924, II (Contains Methanol, Potassium hydroxide)" <p style="text-align: right;">[49 CFR § 172.101(c)(12)(iii)]</p>

Table continued on next page.

Table 5.1. Continued.

8.	<p>If a generic name or n.o.s. shipping name is used, the technical name of the hazardous waste must be entered in (parentheses) in conjunction with the basic description.</p> <ul style="list-style-type: none"> "Waste flammable liquid, n.o.s., 3, UN 1993, II (Contains Hexanes)" "Corrosive liquid, n.o.s., 8, UN 1760, I, (Caprylyl chloride)" <p>[49 CFR § 172.203(k)(2)]</p>
9.	<p>If a hazardous material is a mixture or solution of two or more hazardous materials, the technical names of at least two components most predominantly contributing to the hazards of the mixture or solution must be entered in parentheses with the shipping description.</p> <p>[49 CFR § 172.203(k)(2)]</p>
10.	<p>If the technical name of the compound or principle constituent which meets the criteria of Division 6.1, Packing Group I or II is not part of the proper shipping name, then the technical name must be entered in parentheses.</p> <p>[49 CFR § 172.203(m)(2)]</p>
Hazard Class/Division	
11.	<p>Note the numerical hazard class/division associated with the proper shipping name in column 3 of the Hazardous Materials Table. Ensure the waste meets the criteria of the DoT hazard class/division (see definitions at 49 CFR § 173.50 through § 173.144). If the hazard class/division is the same, enter the numerical hazard class/division after the proper shipping name.</p> <p>[49 CFR § 172.101(d)]</p>
12.	<p>If the hazard class or packing group is not the same, check column 1 of the Hazardous Materials Table to see if there is a plus (+) for one or more of the components of the waste. If a plus (+) is present, the hazard class cannot be modified. If a plus (+) is not present, you may change the hazard class from one listed in the Hazardous Materials Table to the hazard class which more accurately defines the waste.</p> <p>[49 CFR § 172.101(c)(12)(i)]</p>
UN or NA Identification Number	
13.	<p>Enter the UN (United Nations) or NA (North American) identification number from column 4 of the table after the hazard class, preceded by either UN or NA.</p> <p>[49 CFR § 172.101(e)]</p>

Table continued on next page.

Table 5.1. Continued.

Packing Group	
14.	<p>Enter the packing group, in Roman numerals, from column 5 of the Hazardous Materials Table. The packing group may be preceded by the letters PG. If more than one packing group is listed, use the criteria or assigning packing groups found in Subpart D of 49 CFR Part 173.</p> <ul style="list-style-type: none"> "Waste Acetone, 3, UN 1090, II" or "Waste Acetone, 3, UN 1090, PG II" <p style="text-align: right;">[49 CFR § 172.101(f)]</p>
Additional Information	
15.	<p>If the quantity in one package equals or exceeds the reportable quantity (RQ) listed in Appendix A to the Hazardous Materials Table (or when in a mixture or solution, in a concentration by weight which equals or exceeds the concentration corresponding to the RQ of the material), it is considered a hazardous substance and must be appropriately identified in the shipping description. Hazardous substances are regulated by EPA and must be reported when discharged. The following information must be entered, in parentheses, in association with the basic description:</p> <ul style="list-style-type: none"> The name of the hazardous substance as shown in Appendix A to the Hazardous Materials Table; <ul style="list-style-type: none"> "RQ, Hazardous waste, solid, n.o.s., 9, NA 3077, III (Lead)" For hazardous wastes, the EPA hazardous waste number; <ul style="list-style-type: none"> "RQ, Hazardous waste, solid, n.o.s., 9, NA 3077, III (D008)" For hazardous waste which exhibit EPA characteristics of ignitability; corrosivity; reactivity, or toxicity, the letters "EPA" followed by the word "ignitability", "corrosivity", "reactivity", or "toxicity", as appropriate or the corresponding "D" number; <ul style="list-style-type: none"> "Hazardous waste, liquid, n.o.s., 9, NA 3082, III, RQ (EPA Toxicity)" <p>and</p> <ul style="list-style-type: none"> the letters "RQ" must be entered before or after the basic shipping description. <ul style="list-style-type: none"> "RQ, Allyl alcohol, 6.1, UN 1098, I, Poison-Inhalation Hazard, Zone B" "Environmentally hazardous substance, solid, n.o.s., 9, UN 3077, III, RQ (Adipic acid)" <p>Appendix A to the Hazardous Materials Table also contains reportable quantities for listed specific source and non-specific source waste numbers and for hazardous wastes which have the characteristics of ignitability, corrosivity, reactivity, and TCLP toxicity. If the hazardous waste is not a hazardous substance due to specific chemical components, it may still be a hazardous substance due to its EPA hazardous waste number.</p> <p style="text-align: right;">[49 CFR § 172.101(c)(8) and § 172.203(c)]</p>

Table continued on next page.

Table 5.1. Continued.

16.	<p>If a hazardous waste meets the definition of Division 6.1, Packing Group I or II, and the fact that it is a poison is not disclosed in the shipping name or class entry, the word "Poison" shall be associated with the shipping description.</p> <ul style="list-style-type: none"> "Waste Phenol solution, 6.1, UN 2821, II, Poison" <p>[49 CFR § 172.203(m)(1)]</p>
17.	<p>If a material is poisonous by inhalation, the words "Poison-Inhalation Hazard" and the words "Zone A", "Zone B", "Zone C", or "Zone D" for gases or "Zone A" or "Zone B" for liquids, as appropriate, shall be entered on the shipping paper immediately following the shipping description.</p> <ul style="list-style-type: none"> "RQ, Allyl alcohol, 6.1, UN 1098, I, Poison-Inhalation Hazard, Zone B" <p>Hazard zones can be identified under codes 1 through 6, and 13 under the Special Provisions section, column 7 of the Hazardous Materials Table.</p> <p>[49 CFR § 172.203(m)(3), § 173.116(a), and § 173.133(a)]</p>
18.	<p>When non-bulk packages are being shipped by water, the words "Marine Pollutant" must appear in association with the basic description for materials which are a marine pollutant. Marine pollutants are listed in Appendix B to the Hazardous Materials Table.</p> <ul style="list-style-type: none"> "RQ, Waste Mercury compounds, liquid, n.o.s., 6.1, UN 2025, I, Poison, Marine Pollutant, (D009)" <p>[49 CFR § 172.203(l)]</p>
<p>1. <i>If the hazardous waste was turned in with a national stock number, the Hazardous Material Information System may list the proper shipping name, hazard class, and identification number, if the information on the pure material has been updated to reflect HM-181 requirements.</i></p>	

Table 5.2. AF Form 2005, Issue/Turn-In Request Instructions.

Blocks	Information Required
1-3	Enter the letters "TIN".
8-11	Enter the parent Federal stock class which produced the waste.
	9150 Petroleum, oils, lubricants 6850 Solvents 8010 Paints, waste paint related material 5950 Transformers 6350 Antifreeze, windshield washer fluid 9999 Spill Residue
12-14	Enter the letters "PHW".
15-18	Enter the EPA hazardous waste number (D001, F001, P068, etc).
19-22	Enter the contract line item number; usually same as Federal stock class.
23-24	Enter the unit of issue (quantity - GL or LB) for contract line item number.
25-29	Enter the quantity of waste going to disposal (50 = 00050).
30	Enter the activity code "R".
31-35	Enter the generating activity's organization and shop code.
36-39	Enter the Julian date.
40-43	Enter the next serial number from the organization's control register.
44	Enter the material condition code; use the letter "H".
62	Enter the action taken code; enter the number "9".
A	Identify the generating activity manager's name, organization, telephone number, and date.
D	Write the words "Hazardous Waste" to readily identify to base supply. If a hazardous waste profile sheet is not required for turn-in (i.e., it is not a newly generated waste), enter the DRMO assigned waste profile reference number.
F	Identify the cost of disposal, and unit of issue from the applicable disposal contract. Example: \$1.23/GL
J	Enter proper shipping description (see table 5.1 for further information). Example: Waste naphtha, petroleum, 3, UN 1255, II
AF Form 2005 is taken to base supply which will input data to generate DD Form 1348-1.	

Table 5.3. DD Form 1348-1, Disposal Turn-In Document Instructions.

Block	Information Required
8-11	The Federal stock class
15-18	The EPA hazardous waste number
30-43	The 14-position document number which includes the 6-position DoD Activity Address Code (DODAAC) for base supply, 4 position Julian date, and 4-position serial number in columns 30-43
51	The letter "A" under Signal
52-53	The appropriate fund code from DoD 4000.25-7-S1
74-80	The unit acquisition cost
A	Installation's address (usually environmental flight) and EPA or state identification number
B	DRMO's address and EPA or state identification number
C	The notation "HW"
D	The hazardous waste number and Federal stock class
I	Actual weight of the container and contents
T	The quantity within the specific type of container
U	Proper DoT shipping description
V	Reportable Quantity (RQ) in lbs (kgs)
W	Base supply individual's signature in block W
X	Waste stream description: For non-national stock number hazardous waste items, enter the word "Waste" and the item's proper shipping name as shown in 49 CFR Part 172. Attach additional documentation, such as the hazardous waste profile sheet or the material safety data sheet for the hazardous material(s) which generates the waste. For national stock number hazardous waste items, enter the word "Waste" and the item's proper shipping name as found in the Hazardous Materials Information System.
Y	DoT packaging citation: When hazardous waste is turned in in its original package, the generating activity must certify as to the true condition and reliability of the containers. This block must have one of the following statements: "Packaged in accordance with DoT 49 CFR 170-189", or "Packaging equals/exceeds DoT 49 CFR 170-189".
AA	The DRMO assigned waste profile reference number on file for subsequent turn-ins of the same waste stream
FF	The contract line item number in block FF
FF	Total cost of disposal in block FF (computation is contract line item number unit cost times the turn-in quantity)
GG	Total cost of disposal in block GG (computation is contract line item number unit cost times the turn-in quantity)
12	The 6-position bill to DODAAC if other than base supply DODAAC
13	Generating activity enters date/time
14	Generating activity's representative prints name
15	Generating activity's representative signs name

Figure 5.4. Required EPA Marking for Containers of 110 Gallons or Less.

"HAZARDOUS WASTE--Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency.

Generator's Name and Address

Manifest Document Number"

Figure 5.5. Sample of Preprinted Marking Which Can Be Used to Meet EPA/DoT Requirements.

HAZARDOUS WASTE			
FEDERAL LAW PROHIBITS IMPROPER DISPOSAL			
<p>If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency.</p>			
Proper DoT		UN or	
Shipping Name	_____	NA No	_____
Generator	_____		
Address	_____		
City	_____	State	_____
Manifest Document	No	Accumulation Start Date	
	_____	_____	_____
EPA ID No	_____	EPA Hazardous Waste No	

HAZARDOUS WASTE			
FEDERAL LAW PROHIBITS IMPROPER DISPOSAL			

Table 5.5. Placarding Requirements for Table 2 Hazardous Materials.

Table 2 - Placarding Requirements 1,001/5,000 lb (454/2268 kg) Rule		
<ul style="list-style-type: none"> A transport vehicle or freight container which contains less than 1,001 lbs (454 kg) aggregate gross weight of hazardous materials listed below is not required to be placarded. A freight container, unit load device, transport vehicle or rail car which contains non-bulk packages with two or more categories of hazardous materials that require different placards listed below may be placarded "DANGEROUS" instead of individual placards. When 5,000 lbs (2,268 kg) or more of one of the hazard classes are loaded at one facility, the placard listed below for the hazard class is required. In addition to placard specified, any transport vehicle, bulk package, or freight container that contains a material subject to the "Poison-Inhalation Hazard" shipping paper description must be placarded with either the "Poison" or "Poison Gas" placard, as appropriate. There is no need to duplicate these placards if they are required already. 		
Hazard Class	HM-181 Placard	Pre HM-181 Placard
1.4	EXPLOSIVE 1.4	DANGEROUS
1.5	EXPLOSIVE 1.5	BLASTING AGENT
1.6	EXPLOSIVE 1.6	DANGEROUS
2.1	FLAMMABLE GAS	FLAMMABLE GAS
2.2	NON-FLAMMABLE GAS	NON-FLAMMABLE GAS
3	FLAMMABLE	FLAMMABLE
COMBUSTIBLE LIQUID ⁽¹⁾	COMBUSTIBLE	COMBUSTIBLE
4.1	FLAMMABLE SOLID	FLAMMABLE SOLID
4.2	SPONTANEOUSLY COMBUSTIBLE	FLAMMABLE SOLID
5.1	OXIDIZER	OXIDIZER
5.2	ORGANIC PEROXIDE	ORGANIC PEROXIDE
6.1 - PACKING GROUP I OR II, OTHER THAN PG I INHALATION HAZARD	POISON	POISON
6.1 - PACKING GROUP III	KEEP AWAY FROM FOOD	NONE
6.2	NONE	NONE
8	CORROSIVE	CORROSIVE
9 ⁽²⁾	MISCELLANEOUS	NONE
ORM-D	NONE	NONE
Note 1. Combustible liquids in non-bulk packaging are not required to be placarded.		
Note 2. The Class 9 placard is not required for domestic transportation.		

Figure 5.7. Sample Uniform Hazardous Waste Manifest.

Figure 5.7. Sample Uniform Hazardous Waste Manifest.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's U.S. EPA ID No.		Manifest Document No.		2. Page		Information in the shaded areas is not required by Federal law																	
		M	D	9	8	5	4	7	6	1	0	3	2	0	4	3	2	1							
3. Generator's Name and Mailing Address Andrews Air Force Base Knox Street Andrews AFB, MD 20331-6000. S. Smith, Environmental Coordinator												A. State Manifest Document Number													
4. Generator's Phone (301) 981-2348												B. State Generator's ID													
5. Transporter 1 Company Name Waste Transports, Inc.						6. US EPA ID Number MD 3 4 5 5 8 9 6 6 5 6						C. State Transporter's ID													
7. Transporter 2 Company Name						8. US EPA ID Number						D. Transporter's Phone													
9. Designated Facility Name and Site Address Bingham Disposal Systems 25 Industrial Road Upper Marlboro, MD 20331						10. US EPA ID Number MD 4 7 1 1 4 5 3 9 0 9						E. State Transporter's ID													
												F. Transporter's Phone													
												G. State Facility's ID													
												H. Facility's Phone													
11. US DOT Description (Including Shipping Name, Hazard Class, and ID Number)												12. Containers No. Type		13. Total Quantity		14. Unit Wt./Vol		15. Waste No.							
a. Hazardous Waste, Solid, n.o.s., 9, NA 3007, PG III (Chromium, Lead), RQ												0 0 1 D M		0 0 4 5 0		P		D007 D008							
b. RQ, Waste Naphtha, Petroleum, 3, UN 1255, PG II												0 0 1 D M		0 0 4 2 5		P		D001							
c. Waste Corrosive Liquid, n.o.s. (Methylene Chloride, Isopropyl Alcohol), UN 1760, PG I, RQ												0 0 2 D F		0 0 8 4 5		P		F002 D007							
d. RQ, Nickel Cadmium Batteries, 9, NA 3082, PG III												0 0 1 D F		0 0 3 7 0		P		D006							
J. Additional Descriptions for Materials Listed Above												K. Handling Codes for Wastes Listed Above													
15. Special Handling Instructions and Additional Information Emergency contact number: 301-555-0090. In an emergency involving 11a (Hazardous Waste, Solid, NA 3007) refer to 1993 Emergency Response Guidebook (ERG), Guide #31. In an emergency involving 11b (Waste Naphtha, UN 1255) refer to 1993 ERG, Guide #27. In an emergency involving 11c (Waste Corrosive Liquid, n.o.s., UN 1760) refer to 1993 ERG, Guide #60. In an emergency involving 11d (Nickel Cadmium Batteries, NA 3082) refer to 1993 ERG, Guide #31.																									
16. General Certification: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree that I have determined to be economically practicable and that I have selected the most practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment, OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.																									
Printed/Typed Name Steven S. Smith										Signature <i>Steven S. Smith</i>										Month 0		Day 8		Year 2 0 9 4	
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name										Signature										Month		Day		Year	
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name										Signature										Month		Day		Year	
19. Discrepancy Indication Space																									
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest as noted in item 19.																									
Printed/Typed Name										Signature										Month		Day		Year	

EPA FORM 8700-22 (REV. 10-92) Previous editions are obsolete.

Figure 5.8. Sample Uniform Hazardous Waste Manifest Continuation Sheet.

Figure 5.8. Sample Uniform Hazardous Waste Manifest Continuation Sheet.

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)		21. Generator's U.S. EPA ID No. M D 9 8 5 4 7 6 1 0 3 2		Manifest Document No. 0 4 3 2 1		22. Page 2		Information in the shaded areas is not required by Federal law.	
23. Generator's Name and Mailing Address Andrews Air Force Base Knox Street Andrews AFB, MD 20331-6000, S. Smith, Environmental Coordinator						L. State Manifest Document Number			
						M. State Generator's ID			
24. Transporter ___ Company Name				25. US EPA ID Number		N. State Transporter's ID			
26. Transporter ___ Company Name						O. Transporter's Phone			
						P. State Transporter's ID			
27. US EPA ID Number						Q. Transporter's Phone			
28. US DOT Description (including Shipping Name, Hazard Class, and ID Number)				29. Containers		30. Total Quantity		31. Unit	
				No. Type		Vol / Vol		R. Waste No.	
a. RQ, Waste Paint, 3, UN 1263, PG II (Contains Xylene, D001, F003)				0 0 1 D M		0 0 4 0 0		P D001 F003	
b.									
c.									
d.									
e.									
f.									
g.									
h.									
i.									
S. Additional Descriptions for Materials Listed Above						T. Handling Codes for Wastes Listed Above			
32. Special Handling Instructions and Additional Information Emergency contact number: 301-555-0090. In an emergency involving 28a (Waste Paint, UN 1263) refer to 1993 Emergency Response Guidebook, Guide #26.									
33. Transporter ___ Acknowledgement of Receipt of Materials									
Printed/Typed Name				Signature		Month		Day	
34. Transporter ___ Acknowledgement of Receipt of Materials									
Printed/Typed Name				Signature		Month		Day	
35. Discrepancy Indication Space									

EPA FORM 8700-22A (REV. 10-92) Previous editions are obsolete.

Table 5.6. Hazardous Waste Manifest Instructions.

Item	Title	Instructions	
1	Generator's U.S. EPA ID number and Manifest Document Number	Enter the installation's unique 12-digit EPA identification number. Immediately following the EPA ID number, enter a unique five-digit number which assigned to this manifest (number each shipment consecutively or use the Julian date which corresponds to the shipment date).	
2	Page 1 of _____	Enter the total number of pages used. Continuation sheets must be used if more than four waste types are being shipped to the same TSDF on the same shipment or if more than two transporters are used.	
3	Generator's Name and Mailing Address	Enter the name and mailing address of the installation's organization that will manage the returned manifest forms (normally the environmental manager).	
4	Generator's Phone Number	Enter the phone number of an authorized organization on-base that can be reached in the event of an emergency, twenty-four hours a day while the shipment is in transit. * <i>See Emergency Communication Requirements.</i> ⁽²⁾	
5	Transporter 1 (Company Name)	Enter the company name of the first transporter who will transport the waste off-installation.	
6	U.S. EPA ID Number <i>for Transporter 1</i>	Enter the U.S. EPA twelve digit identification number of the first transporter identified in Item 5.	
7	Transporter 2 (Company Name)	If a second transporter will be used to transport the waste to the designated TSDF enter the name of the second transporter. If more than two transporters are used, the additional transporters must be listed on the continuation sheet. <i>Every transporter used between the installation and the designated facility must be listed.</i>	
8	U.S. EPA ID Number <i>for Transporter 2</i>	If a second transporter will be used, enter the second transporter's U.S. EPA identification number.	
9	Designated Facility Name and Site Address	Enter the company name and the site address of the facility you have designated to receive the hazardous waste listed on the manifest. <i>The address must be the site address and cannot be a post office box or rural route number.</i>	
10	U.S. EPA Identification Number <i>for Designated Facility</i>	Enter the U.S. EPA twelve-digit number of the designated facility identified in item 9.	
11	U.S. DoT Proper Shipping Name, Hazard Class, and ID Number, and Packing Group <i>(HM-181 change)</i>	Enter the best and most descriptive DoT proper shipping name, hazard class, UN or NA identification number, and packing group. This information should be listed on the hazardous waste profile sheet for the waste stream. Review the Hazardous Materials Table and the appendix to the Hazardous Materials Table in 49 CFR 172 to ensure the proper shipping name is correct. Use the continuation sheet if space for additional waste descriptions is needed. * <i>See Emergency Communication Requirements.</i> ⁽²⁾	
12	Number and Type of Containers	Enter the number and type of containers for each waste.	
Abbreviation	Type of Container	Abbreviation	Type of Container
DM	Metal drums, barrels, kegs	DT	Dump trucks
DW	Wooden drums, barrels, kegs	CY	Cylinders
DF	Fiberboard or plastic drums, barrels, keg	CM	Metal boxes, cartons, cases , and roll-offs

Table continued on next page.

Table 5.6. Continued.

Abbreviation	Type of Container	Abbreviation	Type of Container
TP	Portable tanks	CW	Wooden boxes, cartons, cases
TT	Cargo tanks (tank trucks)	CF	Fiber or plastic boxes, cartons, case
TC	Tank cars	BA	Burlap, cloth, paper, or plastic bags
Item	Title	Instructions	
13	Total Quantity	Enter the total quantity, excluding the weight of the packaging, of waste described on each line.	
14	Unit of Measure	Enter the appropriate unit of measure (either by weight or by volume) for each waste listed in item 13. G = Gallons (liquids only); P = Pounds; T = Tons (2000 pounds); Y = Cubic Yards; L = Liters (liquids only); K = Kilograms; M = Metric tons (1000 kilograms); and N = Cubic Meters	
15	Special Handling Instructions	If the installation is exporting the hazardous waste, the city and state where wastes will depart from the United States must be entered in this block. This block may be used to indicate special transportation, treatment, storage, or disposal information or bill of lading information. For example, the waste characterization or profile number assigned to your waste by the designated TSDF can be entered in this space. The space may also be used to designate an alternate TSDF to which the waste should be transported if the primary designated facility is unable to receive the waste. * <i>See Emergency Communication Requirements</i> ⁽²⁾	
16	Generator's Certification	<p>The generator must read, sign by hand, and date the certification statement. When the manifest is signed, the person signing it is legally certifying the following: the shipment is fully and accurately described on the manifest; the containers are in proper condition for transportation; a waste minimization program is in place at the installation; and the method of treatment, storage, or disposal is the best available to the installation. The Base Commander or their designee has primary responsibility for signing the manifest as the generator. The designee should be the servicing DRMO or the installation environmental manager. Where DRMO is not the Base Commander's designee, DRMO will co-sign all manifests for shipments of hazardous waste on Defense Logistics Agency accountable records.</p> <p>If a mode of transportation other than highway is being used, cross out the word "highway" in the certification and insert the appropriate mode of transportation, such as rail, water, or air. If rail, water, or air transportation of your waste will occur in addition to highway transportation, add the words "and rail," or "and water," or "and air" after the word "highway" in the certification. If the installation is exporting the hazardous waste, add at the end of the first sentence of the certification the following words: "and conforms to the terms of the EPA Acknowledgement of Consent to this shipment."</p>	

Table continued on next page.

Table 5.6. Continued.

Item	Title	Instructions
17	Transporter 1 (Acknowledgement of Receipt of Materials)	The first transporter must print or type the name of the person accepting the waste, sign, and date the manifest to acknowledge receipt of a shipment. <i>Obtain the hand written signature of the first transporter before the waste is shipped off-installation and retain this copy of the open manifest.</i> Transporters must then deliver the waste to the next designated transporter (if indicated in item 7), the designated facility (as indicated in item 9), an alternate facility designated by the installation, or a designated place outside the United States if the installation is exporting the waste.
18	Transporter 2 (Acknowledgement of Receipt of Materials)	If more than one transporter is used, the second transporter must print or type the name of the person accepting the waste, sign, and date the manifest to acknowledge receipt of a shipment from the first transporter.
19	Discrepancy Indication Space	<p>The designated TSDF or alternate designated facility must note in this space any significant discrepancies between the quantity or type of waste described on the manifest and the quantity or type of waste actually received at the facility. Significant discrepancies in quantity are, for bulk wastes, variations greater than ten percent by weight. A variation in piece count is considered to be a significant discrepancy for waste delivered in containers. For example, one missing or extra drum in a truckload is a significant discrepancy.</p> <p>Significant discrepancies pertaining to the type of waste would be obvious differences, discovered by the TSDF, between the type of waste described on the manifest and the type of waste actually received. For example, waste solvent substituted for waste acid or toxic constituents not reported on the manifest are significant discrepancies.</p>
20	Facility Owner or Operator Certification of Receipt of Hazardous Materials Covered by this Manifest Except as Noted in Item 19	The owner, operator, or authorized representative of the TSDF must print or type and sign his or her name, and enter the date. By signing the manifest, the TSDF acknowledges that the waste has been received and accepted, except for any discrepancies noted in item 19. The TSDF must retain a copy of the manifest and, within 30 days of delivery, send a copy of the closed manifest to the generator.
A ⁽¹⁾	State Manifest Document Number	This is usually a preprinted number on state manifests. Carry over to continuation sheets.
B ⁽¹⁾	State Generator's ID	Enter if state ID number is different than U.S. EPA ID number.
C ⁽¹⁾	State Transporter's ID	Enter state certified hauler number and driver certification number (if required by state).
D ⁽¹⁾	Transporter's Phone	Enter number where authorized agent can be contacted during an emergency.
E ⁽¹⁾	State Transporter's ID	Enter state certified hauler number and driver certification number (if required by state).
F ⁽¹⁾	Transporter's Phone	Enter number where authorized agent can be contacted during an emergency.
G ⁽¹⁾	State Facility's ID	Enter state ID number.

Table continued on next page.

Table 5.6. Continued.

Item	Title	Instructions
H ⁽¹⁾	Facility's Phone	Enter number where authorized agent can be contacted during an emergency.
I ⁽¹⁾	Waste Number	Enter EPA hazardous waste number.
J ⁽¹⁾	Additional Description for Materials Listed Above	Enter EPA hazardous code (I/C/R/E/H/T), physical state (solid-S; liquid-L; gas-G; sludge-SL), specific gravity; and estimated percentage of each waste constituent.
K ⁽¹⁾	Handling Codes for Wastes Listed Above	Enter code for how waste will be handled (landfill-L; incineration, heat recovery, burning-B; chemical or physical treatment-T; reuse or recycling-R; and storage-S).
<p>Note 1: Items A through K (shaded area) are not required by the Federal regulations. However, many states may require the waste generator or the TSDF to complete some or all of this information. The instructions listed above are typical of the state requirements but state environmental authorities should be contacted to specific requirements have been identified.</p> <p>Note 2: Emergency Communication Requirements. Emergency response telephone numbers must be entered on a manifest either immediately following descriptions in item 11, in item 4, or in another clearly visible location if the number is for all wastes listed on the manifest and the manifest indicates that the number is for emergency response information. For example, the notation "EMERGENCY CONTACT: (555) 555-1234", is an appropriate way to identify the emergency response telephone number on a manifest.</p> <p>DoT regulations also require additional emergency response information to be included on the manifest or attached to the manifest. The manifest must include, as a minimum, the following information: hazardous materials description; immediate hazards to health; risks of fire or explosion; immediate precautions to be taken in the event of an accident or incident; immediate methods for handling small or large fires; initial methods for handling spills or leaks in the absence of fire; preliminary first aid measures; and 24-hour manned emergency response telephone number. Transporters must keep the information easily accessible during transportation. A reference for each waste stream to the appropriate guide page in the DoT Emergency Response Guidebook in Section 15 of the manifest will satisfy this requirement if the transporter maintains a copy of the Guidebook in the vehicle at all times.</p> <p>The following burden disclosure statement must be included with each uniform hazardous waste manifest, either on the form, in the instructions to the form, or accompanying the form:</p> <p>"Public reporting burden for this collection of information is estimated to average 37 minutes for generators, 15 minutes for transporters, and 10 minutes for treatment, storage, and disposal facilities. This includes time for reviewing instructions, gathering data, and completing and reviewing the form. Send comments regarding the burden estimate, including suggestions for reducing the burden to: Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M Street SW, Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Office of Management and the Budget, Washington, DC 20503."</p>		

Table 5.7. Hazardous Waste Manifest (Continuation Sheet) Instructions.

Item	Title	Corresponding Instructions From Manifest
21	Generator's U.S. EPA ID Number and Manifest Document Number	1
22	Page ___ of ___	2
23	Generator's Name	3
24, 26	Transporter(s) Company Name(s) and Order (enter the sequential order of that transporter after the word "Transporter")	5, 7
25, 27	Transporter(s) U.S. EPA ID Number(s)	6, 8
28	U.S. DoT Shipping Description	11
29	Number and Type of Containers	12
30	Total Quantity	13
31	Unit of Measure	14
32	Special Handling Instructions	15
33, 34	Transporter(s) Acknowledgment of Receipt of Materials	17, 18
35	Discrepancy Indication Space	19
L -T	Not required by EPA	Check state requirements

Continuation sheets must be used if either of the following apply: more than two transporters are used to transport the waste or more space is needed for additional US DoT descriptions and related information because more than four different wastes are being shipped. Most of the same information required on the manifest is also required on the continuation sheet to the manifest.

Table 5.8. RCRA Records and Corresponding Minimum Retention Periods.

Record or File	Retention Time	Citation
Hazardous waste determination documentation	5 years from the date that the waste was last sent to a treatment, storage, or disposal facility†	40 CFR 268.7(a)(7)
Annual report	3 years from the due date of the report†	40 CFR 262.41
Hazardous waste manifest	5 years from the day the waste was accepted by the initial transporter†	40 CFR 262.20
Accumulation site inspection logs	3 years from the date the inspection was conducted†	40 CFR 262.34 40 CFR 265.15(d) 40 CFR 265.174
Exception reports	3 years from the due date of the report†	40 CFR 262.42
Land disposal restriction notice & certification	5 years from the date the waste was last sent to a TSDF†	40 CFR 268.7
Notification of intent to export waste	3 years from the date the hazardous waste was accepted by the initial transporter†	40 CFR 262.53
EPA acknowledgement of consent (for exports)	3 years from the date the hazardous waste was accepted by the initial transporter†	40 CFR 262.51 40 CFR 262.53
Waste export confirmation of delivery	3 years from the date the hazardous waste was accepted by the initial transporter†	40 CFR 262.54
Annual report (required of primary exporters of hazardous waste)	3 years from the date the hazardous waste was accepted by the initial transporter†	40 CFR 262.56
Employee training records	Current personnel: until closure of facility; former personnel: 3 years from date the individual last worked at facility	40 CFR 262.34 40 CFR 265.16
† The periods of retention are extended automatically during the course of any unresolved enforcement action or as requested by EPA.		

Federal Requirements Summary

Large Quantity (LQ): Small Quantity (SQ): Conditionally Exempt Small Quantity (CEQ): Permitted Storage Facility (PSF)					
Element	Standard	LQ	SQ	CEQ	PSF
Shipping Papers (Manifests):	49 CFR Part 172 Subpart C	✓	✓	✓	✓
Proper Shipping Names	49 CFR § 172.101(c) 49 CFR § 172.202(a)(1)	✓	✓	✓	✓
+ Symbol	49 CFR § 172.101(b)(1)	✓	✓	✓	✓
Hazardous Substances	49 CFR § 172.101(c)(8)	✓	✓	✓	✓
ID Waste Number	49 CFR § 172.203(c)				
Reportable Quantities (RQs)	Appendix A to 172.101 (Table)				
Adding the Word "Waste"	49 CFR § 172.101(c)(9)	✓	✓	✓	✓
Mixtures and Solutions	49 CFR § 172.101(c)(10) 49 CFR § 172.203(k)(2)	✓	✓	✓	✓
Revising Hazard Class, Packing Group, or Subsidiary Hazard	49 CFR § 172.101(c)(12)(i)	✓	✓	✓	✓
Generic or N.O.S. Descriptions	49 CFR § 172.101(c)(12)(ii) 49 CFR § 172.203(k)	✓	✓	✓	✓
Multiple Hazard Materials	49 CFR § 172.101(c)(12)(iii)	✓	✓	✓	✓
General Entries	49 CFR § 172.201	✓	✓	✓	✓
Description of Hazardous Materials on Shipping Papers	49 CFR § 172.202	✓	✓	✓	✓
Poisonous Materials	49 CFR § 172.203(m)	✓	✓	✓	✓
Elevated Temperature	49 CFR § 172.203(n)	✓	✓	✓	✓
Shipper's Certification	49 CFR § 172.204	✓	✓	✓	✓
Hazardous Waste Manifest	40 CFR 262 Subpart B Appendix to 40 CFR Part 262 40 CFR Part 263 Subpart B 49 CFR § 172.205	✓	✓		✓
Emergency Response Information	49 CFR § 172.602	✓	✓	✓	✓
Emergency Response Telephone Number	49 CFR § 172.604	✓	✓	✓	✓
Land Disposal Notifications/Certifications Accompanying Manifest	40 CFR § 268.7	✓	✓		✓
Hazardous Wastes Which Are Combustible Liquids	49 CFR § 172.101(d)(4) 49 CFR § 173.150(f)	✓	✓	✓	✓

Table continued on next page.

Federal Requirements Summary

Large Quantity (LQ); Small Quantity (SQ); Conditionally Exempt Small Quantity (CEQ); Permitted Storage Facility (PSF)					
Element	Standard	LQ	SQ	CEQ	PSF
Packing Groups:	49 CFR § 172.101(f)	✓	✓	✓	✓
Class 3	49 CFR § 173.121	✓	✓	✓	✓
Class 4	49 CFR § 173.125	✓	✓	✓	✓
Class 5	49 CFR § 173.127-129	✓	✓	✓	✓
Class 6 (Hazard Zones)	49 CFR § 173.133	✓	✓	✓	✓
Class 8	49 CFR § 173.137	✓	✓	✓	✓
Class 9	49 CFR § 173.141	✓	✓	✓	✓
Markings:	40 CFR § 262.32 49 CFR Part 172 Subpart D	✓	✓	✓	✓
Proper Shipping Name and Identification Number	49 CFR § 172.301(a) 40 CFR § 262.32(a)	✓	✓	✓	✓
Technical Names	49 CFR § 172.301(b)	✓	✓	✓	✓
Consignee's or Consignor's Name and Address	49 CFR § 172.301(d)	✓	✓	✓	✓
Legibility, Background, and Location	49 CFR § 172.304	✓	✓	✓	✓
Package Orientation Marking	49 CFR § 172.312 40 CFR § 262.32(a)	✓	✓	✓	✓
Poisonous-Inhalation Hazard	49 CFR § 172.313 40 CFR § 262.32(a)	✓	✓	✓	✓
Hazardous Substances	49 CFR § 172.324 40 CFR § 262.32(a)	✓	✓	✓	✓
Identification Number for Bulk Packaging	49 CFR § 172.332	✓	✓	✓	✓
Hazardous Waste Warning, Manifest Document Number, and Generator Name and Address	40 CFR § 262.32(b)	✓	✓	✓	✓

Table continued on next page.

Federal Requirements Summary

Large Quantity (LQ); Small Quantity (SQ); Conditionally Exempt Small Quantity (CEQ); Permitted Storage Facility (PSF)					
Element	Standard	LQ	SQ	CEQ	PSF
Labels:	40 CFR § 262.31 49 CFR § 172.101(g) 49 CFR Part 172 Subpart E	✓	✓	✓	✓
General Requirements	49 CFR § 172.400	✓	✓	✓	✓
Exceptions	49 CFR § 172.400a	✓	✓	✓	✓
Subsidiary Hazard Labels	49 CFR § 172.402(a)	✓	✓	✓	✓
Display of Hazard Class on Labels	49 CFR § 172.402(b)	✓	✓	✓	✓
Cargo Aircraft Only	49 CFR § 172.400(c)	✓	✓	✓	✓
Radioactive Material	49 CFR § 172.403	✓	✓	✓	✓
Mixed/Consolidated Pkg	49 CFR § 172.404	✓	✓	✓	✓
Placement of Labels	49 CFR § 172.406	✓	✓	✓	✓
Placards:	40 CFR § 262.33 49 CFR Part 172 Subpart F	✓	✓	✓	✓
Identification Number Markings	49 CFR § 172.503 49 CFR § 172.332-338	✓	✓	✓	✓
Exemptions for Combustible Liquids in Non-Bulk Packaging	49 CFR § 172.500(b)(5)	✓	✓	✓	✓
General Requirements (Tables 1 & 2)	49 CFR § 172.504	✓	✓	✓	✓
Dangerous Placard	49 CFR § 172.504(b)	✓	✓	✓	✓
Additional Placarding Exceptions	49 CFR § 172.504(f)	✓	✓	✓	✓
Subsidiary Hazards	49 CFR § 172.505	✓	✓	✓	✓
Freight Containers and Aircraft Unit Load Devices	49 CFR § 172.512	✓	✓	✓	✓
Visibility and Display of Placards	49 CFR § 172.516	✓	✓	✓	✓

Table continued on next page.

Federal Requirements Summary

Large Quantity (LQ); Small Quantity (SQ); Conditionally Exempt Small Quantity (CEQ); Permitted Storage Facility (PSF)					
Element	Standard	LQ	SQ	CEQ	PSF
Marine Pollutants (Over Water):					
Applicability to Non-Bulk Packages	49 CFR § 171.4(c)	✓	✓	✓	✓
List of Marine Pollutants	49 CFR § 172.101 Appendix B	✓	✓	✓	✓
Shipping Description	49 CFR § 172.203(l)	✓	✓	✓	✓
Marking Non-Bulk Packaging for Vessels	49 CFR § 172.322	✓	✓	✓	✓
Loading/Unloading of Transport Vehicle:	49 CFR § 173.30	✓	✓	✓	✓
Railroad	49 CFR Part 174 Subpart C	✓	✓	✓	✓
Aircraft	49 CFR Part 175 Subpart B	✓	✓	✓	✓
Vessel	49 CFR Part 176	✓	✓	✓	✓
Public Highway	49 CFR Part 177 Subparts B & C	✓	✓	✓	✓
Transportation by:					
Rail	40 CFR § 262.23(d) & 263.20(f)	✓	✓		✓
Water	40 CFR § 262.23(c) & 263.20(e)	✓	✓		✓
Transportation and Disposal:					
Manifest Requirements for Transportation by:	40 CFR Part 262 Subpart B 40 CFR § 262.40(a)	✓	✓		✓
Exception Report	40 CFR § 262.42	✓	✓		✓
Discrepancy Report	40 CFR § 264/265.72				✓
Land Disposal Restrictions	40 CFR § 268.7(a)(4)	✓	✓		✓
Biennial Report	40 CFR § 262.40(b) & 41	✓	✓		✓

Chapter 6

EMERGENCY PROCEDURES AND PREVENTION

6.1. Overview. Throughout the life-cycle of the hazardous waste, caution must be taken to manage and operate hazardous waste in a way that protects human health and minimizes the possibility of a fire, explosion, or release into the environment. AF installations must develop written emergency response procedures for all hazardous waste generation and storage locations and incorporate these contingency plan requirements into the installation's hazardous materials (HAZMAT) emergency planning and response plan (called the HAZMAT Plan), described in Air Force Pamphlet, AFPAM 32-4013, *Hazardous Material Emergency Planning and Response Guide*. The installation's HAZMAT Planning Team and Response Team play integral roles in the development of the HAZMAT Plan to cover all hazardous waste contingencies. They can assist generating activities in developing their site-specific requirements.

6.2. Preparedness Requirements. Accumulation sites and permitted facilities must be equipped with the following: a communication system to summon emergency assistance (telephone or radio); an internal communication or alarm system to alert personnel who can be affected during an emergency; fire suppression equipment (fire extinguishers, fire extinguishing system, an adequate water supply, etc.); spill control equipment; and decontamination equipment. The type and amount of equipment depends upon the activities being conducted, characteristics of the stored hazardous waste, type of storage facility and surrounding terrain, human and environmental exposures, and capabilities of emergency responders. [40 CFR Part 264.32 & 265.32; 264.34 & 265.34]

6.2.1. Initial Accumulation Points. Generating activities should maintain communication and alarm systems, fire and spill control equipment, an emergency shower, and an emergency eyewash near their initial accumulation points. The HAZMAT Planning Team can assist generating activities, accumulation site managers, and permitted storage facilities in identifying their equipment requirements and incorporating its use in site-specific procedures.

6.2.2. Equipment Testing. All required emergency equipment must be tested and maintained to ensure its reliability during an incident. A periodic inspection schedule should be established and all inspections documented. [40 CFR Part 264.33 & 265.33]

6.3. Response Requirements.

6.3.1. Local Authorities. Most Air Force installations possess the capabilities to provide on-installation response to emergencies resulting from hazardous waste spills, fires, or explosions. However, situations may arise where the services of off-installation agencies or organizations may also be required. Arrangements must be made to familiarize police, fire departments, and emergency response teams both on- and off-base with the following information:

- Layout of the installation;
- Properties of hazardous waste handled at the installation and associated hazards;
- Places where installation personnel would normally be working;
- Entrances to roads inside the installation; and
- Possible evacuation routes. [40 CFR Part 264.37(a)(1) & 265.37(a)(1)]

6.3.1.1. Where more than one police and fire department or hazardous materials team might respond to an emergency, installations must establish agreements designating primary emergency authority to a specific agency and agreements with any others to provide support to the primary. Written agreements with state emergency response teams, emergency response contractors, and equipment suppliers should be established if any of them would be called upon to assist in installation emergency incident response efforts. [40 CFR Part 264.37(a)(2)(3) & 265.37(a)(2)(3)]

6.3.1.2. Arrangements for all agreements are made by the installation commander or his designee. All arrangements made are to be documented. In cases where state or local authorities decline to enter into an agreement to support emergency operations involving hazardous waste, the refusal must also be documented. [40 CFR Part 264.37(b) & 265.37(b)]

6.3.1.3. Provide each agency or organization with a copy of the installation HAZMAT plan. For documentation, retain a copy of the cover letter submitted with each contingency plan. Document familiarization visits by having each visitor sign a log. [40 CFR Part 264.53(b) & 265.53(b)]

6.3.1.4. Medical personnel must be familiar with the properties of the hazardous wastes. The installation bioenvironmental engineering services should assist in determining potential types of injuries or illnesses and the effects of overexposure. Aeromedical Services personnel will assist in determining the emergency first aid procedures for each hazardous waste listed. Arrangements must be made to familiarize local hospitals

with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases from your installation. [40 CFR Part 264.37(a)(4) & 265.37(a)(4)]

6.4. Incorporation of Requirements into Installation's HAZMAT Plan.

6.4.1. HAZMAT Plan -- Contingency Plan Requirements. To minimize hazards to human health or the environment, detailed written emergency procedures must be developed for the handling of hazardous waste emergencies (fire, explosion, or release). Permitted facilities and large quantity generators must incorporate the procedures into a contingency plan. All procedures and plans must incorporate the requirements of 29 CFR Part 1910.120, *Hazardous Waste Operations and Emergency Response*, paragraphs (p) and (q); and *The Emergency Planning and Community Right-to-Know Act of 1986*. [40 CFR 262.34(a)(4), 264.51, & 265.51]

6.4.1.1. Small quantity generators must develop emergency response procedures only. Permitted facilities, such as a storage facility operated by DRMO, have a contingency plan incorporated into their Part B permit. [40 CFR 262.34(d)(5) & 270.14(7)]

6.4.1.2. The contingency plan need not be a separate document. AFI 32-4002 establishes the requirement to incorporate written procedures and contingency plans into the installation's HAZMAT Plan. Specific planning requirements are listed in AFPAM 32-4013, *Hazardous Materials Emergency Planning and Response Guide*. The HAZMAT Plan must include the following contingency plan requirements: current listing of emergency coordinators (Incident Commanders or On-Scene Commanders who will manage the emergency incident); arrangements to coordinate activities amongst all on- and off-base emergency responders (command, control and coordination); a thorough description of available emergency equipment; and an evacuation plan and procedures for accumulation site or storage facility personnel. [40 CFR Part 264.52 & 265.52]

6.4.2. HAZMAT Plan - Review & Update. AF Installations must ensure the HAZMAT Plan is kept current and reflects changes within the installation impacting the plan. Some potential changes requiring Plan amendment include the following:

- Any changes to RCRA standards or applicable state requirements which impact the plan;
- The plan fails in the event of an emergency;
- Any installation changes that increase the potential for fires, explosions, or releases of hazardous waste or changes in the response requirements;
- The list of emergency coordinators changes; or
- The list of equipment necessary to respond to emergencies changes. [40 CFR Part 264.54 & 265.54]

6.4.2.1. All organizations and activities on- and off-base must receive a copy of the current HAZMAT Plan. [40 CFR Part 264.53 & 265.53]

6.4.2.2. The HAZMAT Plan is implemented whenever there is an emergency which involves hazardous waste. [40 CFR Part 264.51 & 265.51]

6.5. Emergency Coordinator Responsibilities. The Incident Commander (IC) or On-Scene Commander (OSC), designated as the RCRA emergency coordinator, oversees all response actions and ensures the proper notifications are made to outside agencies. Responsibilities include the following: [40 CFR Part 262.34(d)(5)(i)(iv), 264.55 & 265.55]

6.5.1. Ensures all personnel within the immediate hazard area have been notified and have taken appropriate actions according to the HAZMAT Plan. [40 CFR Part 264.56(a)(1) & 40 CFR 265.56(a)(1)]

6.5.2. Immediately notifies those emergency response organizations with designated response roles. [40 CFR Part 262.34(d)(5)(iv)(A), 264.56(a)(2) & 40 CFR 265.56(a)(2)]

6.5.3. Immediately notifies affected local emergency planning committees (LEPC) and state emergency response commission (SERC) if the release will go or has gone off the installation. [40 CFR Part 355.40(b)]

6.5.4. Conducts a thorough site assessment (size up) of the situation to ensure all hazardous waste involved and their hazards have been properly identified using visual clues, data sources, and monitoring, as required. [40 CFR Part 264.56(b)(c) & 40 CFR 265.56(b)(c)]

6.5.5. Develops an incident action plan to control the situation based on the requirements of the HAZMAT Plan and 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response*, paragraph (q). [40 CFR Part 262.34(d)(5)(iv)(B), 264.56(e) & 40 CFR 265.56(e)]

6.5.6. Ensures evacuation of installation personnel within the hazard area. If evacuation beyond the installation is required, notifies the local authorities immediately and coordinates their response actions with the installation's. The National Response Center (NRC) must also be immediately notified at (800) 424-8802. [40 CFR 262.34(d)(5)(iv)(C), Part 264.56(d)(1) & 40 CFR 265.56(d)(1)]

6.5.7. Ensures hazardous waste operations or processes which were abandoned or stopped do not create further hazard during the emergency. [40 CFR Part 264.56(f) & 40 CFR 265.56(f)]

6.5.8. Controls run-off of any fire fighting agents used. Holds run-off until analyzed. If analysis proves hazardous, takes appropriate action in accordance with local, state, and Federal authorities. [40 CFR Part 262.34(d)(5)(iv)(B), 264.56(g) & 40 CFR 265.56(g)]

6.5.9. After the emergency phase, ensures all recovery and remediation activities are conducted in accordance with local, state, and Federal authorities. All corrective

actions involving clean-up operations at sites covered by RCRA must be conducted according to 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response*, paragraphs (b) through (o). [29 CFR Part 1910.120(a), 40 CFR Part 262.34(d)(5)(iv)(B), 264.56(g) & 40 CFR 265.56(g)]

6.5.10. Ensures hazardous waste operations or processes which are incompatible with the released hazardous waste are not initiated until clean-up is completed and emergency equipment is ready for use. [40 CFR Part 264.56(h) & 40 CFR 265.56(h)]

6.5.11. Ensures appropriate notification to the EPA Regional Administrator, and state and local authorities that the hazardous waste facility is back into compliance before operations are resumed. Ensures documentation of the incident is properly annotated in facility operating records and that a written report is submitted to the EPA Regional administrator within fifteen (15) days. [40 CFR Part 264.56(i)(j) & 40 CFR 265.56(i)(j)]

6.6. Toxic Chemical Release Reporting (EPA Form R).

Executive Order 12586 requires all Federal agencies to establish guidelines to comply with the requirements of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act (SARA). Under Section 313 of EPCRA, installations must annually report the amount of hazardous wastes accidentally or routinely released into the environment and the amount contained in wastes transferred off-site. [40 CFR Part 372]

6.7. Release Reporting and Emergency Notification (Incident Report).

There are numerous Federal, state, and local laws which require verbal notification and written reports. A written report must be submitted to the EPA Regional Administrator within 15 days of the incident. In addition, all hazardous waste releases must be reported and documented according to AFI 32-4002, chapter 4. [40 CFR § 264/265.56(j)]

Federal Requirements Summary

Large Quantity (LQ); Small Quantity (SQ); Conditionally Exempt Small Quantity (CEQ); Permitted Storage Facility (PSF)					
Element	Standard	LQ	SQ	CEQ	PSF
General Inspection Requirements	40 CFR Part 262.34 40 CFR Part 264/265.174 40 CFR Part 264/265.195	✓	✓		✓
Personnel Training	40 CFR Part 262(d)(5)(iii) 40 CFR Part 264/265.16 29 CFR Part 1910.38(a)(5) 29 CFR Part 1910.120	✓ ✓ ✓	✓ ✓ ✓	 ✓	✓ ✓ ✓
Preparedness and Prevention:	40 CFR Part 262.34(d)(4)		✓		
Facility Maintenance and Operation	40 CFR Part 264/265.31	✓	✓		✓
Required Equipment	40 CFR Part 264/265.32	✓	✓		✓
Equipment Testing and Maintenance	40 CFR Part 264/265.33	✓	✓		✓
Communications or Alarm System	40 CFR Part 264/265.34	✓	✓		✓
Required Aisle Space	40 CFR Part 264/265.35	✓	✓		✓
Arrangements with Local Authorities	40 CFR Part 264/265.37	✓	✓		✓
Contingency Plan:	40 CFR Parts 264 or 265	✓			✓
Purpose and Implementation	40 CFR Part 264/265.51	✓			✓
Content	40 CFR Part 264/265.52	✓			✓
Copies	40 CFR Part 264/265.53	✓			✓
Amendments	40 CFR Part 264/265.54	✓			✓
Emergency Coordinator	40 CFR Part 262.34(d)(5)(i) 40 CFR Part 264/265.55	✓	✓		✓
Emergency Procedures	40 CFR Part 262.34(d)(5)(iv) 40 CFR Part 264/265.56 40 CFR Part 264/265.196 29 CFR Part 1910.38 29 CFR Part 1910.120(p) & (q)	✓ ✓ ✓	✓ ✓ ✓	 ✓	✓ ✓ ✓

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Federal Requirements Summary

Large Quantity (LQ); Small Quantity (SQ); Conditionally Exempt Small Quantity (CEQ); Permitted Storage Facility (PSF)					
Element	Standard	LQ	SQ	CEQ	PSF
Recovery and Remediation	40 CFR Part 262.34(d)(5)(iv)(B) 40 CFR Part 264/265.56 40 CFR Part 264/265.196	✓			✓
	29 CFR Part 1910.120	✓	✓	✓	✓
Reporting	40 CFR Part 262.34 40 CFR Part 264/265.56 40 CFR Part 264/265.196(d)	✓			✓
	40 CFR Part 355.40(b)	✓	✓	✓	✓
Toxic Chemical Release Reporting (EPA Form R)	40 CFR Part 372	✓	✓	✓	✓
Operations at TSDFs:	29 CFR Part 1910.120(p)				
Safety and Health Program	29 CFR Part 1910.120(p)(1)				✓
Hazard Communication Program	29 CFR Part 1910.120(p)(2)				✓
Medical Surveillance Program	29 CFR Part 1910.120(p)(3)				✓
Decontamination Program	29 CFR Part 1910.120(p)(4)				✓
New Technology Program	29 CFR Part 1910.120(p)(5)				✓
Material Handling Program	29 CFR Part 1910.120(p)(6)				✓
Training Program	29 CFR Part 1910.120(p)(7)				✓
Emergency Response Program * (see Notes and Exceptions)	29 CFR Part 1910.120(p)(8) 29 CFR Part 1910.120(a)(2)(iii)	✓ *	✓ *	✓ *	✓ ✓

Chapter 7

PERSONNEL SAFETY

7.1. Overview. Basic health and safety issues must be recognized and followed whenever and wherever hazardous wastes are present. This chapter discusses some of the hazards posed by hazardous waste and how to protect yourself and fellow co-workers.

7.2. Typical Hazards and Harms. Hazardous wastes are characterized as being ignitable (gases, liquids, or oxidizers which burn easily), corrosive (mainly acids or bases), reactive (explode easily, react violently with water, or generate toxic gases at low or high pH), or toxic. Hazardous wastes present a multitude of chemical and physical hazards which can harm personnel who come in contact or are exposed. If personnel become aware of these hazards through training and follow the proper procedures when handling hazardous wastes, the chance

of harm to themselves, other personnel, property, and the environment is reduced dramatically. There are several ways for hazardous wastes to create harm: thermal (heat, heat of reaction, and cold); radiation; asphyxiation (lack of oxygen); corrosive (action by acid or base); contact (chemical burns or dermatitis); etiologic (biologic exposure, such as medical infectious waste); mechanical (direct physical contact with container, slipping, falling, sharp objects); and toxic (poisonous) effects. Many of these hazards cannot be seen or are not obvious, so personnel must know the physical and chemical characteristics of the hazardous wastes, especially the exposure symptoms and emergency first aid treatment.

7.2.1. Exposure Routes. Workers may be exposed to hazardous chemicals and wastes through contact, inhalation, absorption, ingestion, and injection. While the

following paragraphs briefly describe these exposure routes, more detailed information and the specific hazards from your wastes may be obtained from the installation bioenvironmental services.

7.2.1.1. Contact with the skin, eyes, and mucous membranes is the most common way in which chemicals damage humans. Some wastes, such as acids and bases, may cause burns; some may remove the skin's natural oils; others may cause rashes. Protective clothing, gloves, and eye protection are critical for workers handling hazardous materials and wastes which pose contact hazards.

7.2.1.2. Inhalation is one the most important routes of exposure. Not only can chemicals damage the respiratory system, but also they can be transferred to the bloodstream and eventually damage or accumulate in other parts of the body. Respiratory protection is critical for workers handling hazardous chemicals and wastes which pose an inhalation hazard.

7.2.1.3. While the skin usually acts as a very effective barrier, some chemicals can be absorbed through the skin. Warmth and moisture increase the penetration rate through the skin. Sweating opens the skin pores. Inflamed skin and hair follicles also speed the absorption process. Skin protection is critical for workers handling hazardous wastes which pose an absorption hazard.

7.2.1.4. Ingestion of a hazardous waste is less common than the other routes of exposure, but can be a problem when proper precautions are not taken. Protective clothing will protect a person from ingesting a hazardous waste if splashed. Because of the potential for hand-to-mouth transfer, eating, drinking, smoking, and applying cosmetics should be prohibited until personnel have been decontaminated, removed their protective clothing, and washed accordingly.

7.2.1.5. Injection is the least common form of entry, but can be one of the most hazardous. Puncture wounds from sharp objects allow hazardous waste toxins to directly enter the blood stream. Breaks in the skin can serve as avenues for injections of toxins into the blood stream. Personnel must be aware of surroundings which contain physical hazards and protect themselves accordingly with the proper protective clothing and procedures.

7.2.2. **Toxic Health Effects.** Health effects can vary greatly based on the type of exposure and the person being exposed. A person can receive an acute exposure, resulting from a single incident. Or exposure can be chronic, resulting from repeated doses over a period of time. Exposure effects can be localized, affecting only the tissue with which it came in contact. Or the exposure effect can be systemic, traveling through the body to affect certain body organs or systems. Exposure effects can also be a combination of the above. Exposure reactions are also based on time. An acute reaction has an adverse health effect immediately, with symptoms developing rapidly. A chronic reaction is an adverse health effect

with symptoms that develop slowly or recur frequently due to the exposure. To help determine how toxic a hazardous waste is to humans, personnel should become familiar with the toxicological terms and exposure values, such as permissible exposure limit (PEL), threshold limit value-time weighted average (TLV-TWA), occupational exposure limit (OEL), and others. The terms are included in the glossary in attachment 2. The installation bioenvironmental engineering services can provide further information and training in these terms and values.

7.3. How to Protect Yourself and Co-Workers. Before personnel become involved with hazardous wastes, they must be appropriately trained to understand the hazardous wastes with which they will come in contact, their potential hazards and harms, exposure symptoms and emergency first aid treatment, the appropriate engineering controls and steps to operate, the appropriate personal protective clothing and equipment required to perform the various types of hazardous waste activities, and the specific procedures for each activity in which they take part. They must then follow these requirements to the letter and ensure their co-workers do the same.

7.3.1. **Protective Equipment.** Hazardous waste work areas should be equipped with the appropriate engineering controls to reduce and maintain personnel exposure below published acceptable limits, thus minimizing the potential harm and hazards of hazardous wastes. When engineering controls are impractical, personal protective equipment may be required. Personal protective equipment includes respiratory and skin protection to protect the worker against chemical (corrosive, toxic, or etiologic) and physical harms (thermal, asphyxiation, or mechanical). Personal protective equipment must be properly selected to fit the potential harms, the task, the environment (work areas), and the worker. OSHA Standards 29 CFR Part 1910, Subpart I, AFOSH Standards 127-31 and 48-1, and bioenvironmental engineering services must be consulted on the proper selection of personal protective equipment.

7.3.1.1. When a written personal protective equipment program is required it should address the following: selection based upon site hazards; use and limitations of the equipment; work mission duration; maintenance and storage; decontamination and disposal; training and proper fitting; donning and doffing procedures; inspection procedures prior to, during, and after use; evaluation of the effectiveness of the personal protective equipment program; and limitations during temperature extremes, heat stress, and other appropriate medical considerations. When elements, such as donning and doffing procedures, are provided by the manufacturer of a piece of equipment and are attached to the plan, they need not be rewritten into the plan as long as they adequately address the procedure or element. [29 CFR Part 1910.120 (g)(5) and (p)(1)]

7.4. Safe Working Procedures. All initial accumulation points, accumulation sites, and permitted facilities must develop site-specific procedures for the handling of hazardous waste. These procedures should cover normal day-to-day, non-routine, and emergency activities. The fire protection flight, ground safety, environmental management, and bioenvironmental engineering services should be consulted for specific site requirements. The HAZMAT Planning Team should review all emergency procedures to ensure they are compatible with the HAZMAT Plan protocols. [40 CFR Part 262.34(a)(4) and (d)(5)(iii) & 264/265, Subpart D]

7.4.1. Container Safety. Container and tank management is a critical safety issue. If the hazardous waste is not released from its container or tank, personnel will not be exposed to the harms of the hazardous waste. Procedures must be developed to ensure the following: hazardous waste is only placed in containers or tanks in good condition; the containers or tanks are compatible with the hazardous waste; the handling of containers minimizes the risk of a release; containers are kept closed during storage; and daily (tanks) or weekly (containers) inspections are conducted. [40 CFR Part 264.17 & 265.17; 40 CFR Part 264/265 Subparts I & J]

7.4.2. Explosion Safety. To reduce the potential for fires or explosions, all hazardous waste which presents an ignitability hazard must be handled according to flammable and combustible liquids requirements cited in 29 CFR Part 1910.106, National Fire Protection Association's *Flammable and Combustible Liquids Code* (NFPA Standard 30), and AFOSH Standard 127-43. [40 CFR Part 264.17(a) & 265.17(a)]

7.4.2.1. One common problem with hazardous waste is the mixing of incompatible wastes, leading to violent reactions, container or tank failures with release of hazardous waste, toxic or flammable gas clouds, fires, or explosions. Situations created by incompatible waste mixing pose extreme danger to site personnel, emergency responders, the public, and the environment. Incompatible wastes and materials must be kept separate at all times through proper procedures and engineering controls. AFOSH Standard 127-68, *Chemical Safety*, and the *Handbook of Chemical Hazard Analysis Procedures* (FEMA/DoT/EPA, 1989) can be used to determine the compatibility of hazardous wastes. Material safety data sheets for the materials which generate the hazardous waste should be reviewed for incompatible mixtures and unsuitable containers. The bioenvironmental engineering services, the environmental manager, and fire protection flight should be consulted when there is an uncertainty about mixing or container compatibilities of any hazardous wastes. [40 CFR Parts 264.17(b), 264.172, 264.177, Appendix V & 265.17(b), 265.172, 265.177, Appendix V]

7.4.3. Changes to Hazardous Waste Process. Before any hazardous waste disposal process or activity is modified, or a new process or activity is planned, the

environmental manager, bioenvironmental engineering services, and HAZMAT Planning Team should be consulted.

7.4.4. Permitted Facility Requirements. Permitted and interim status facilities have additional requirements established by 29 CFR Part 1910.120, *Hazardous Waste Operations and Emergency Response*, paragraph (p). Requirements include programs in safety and health, hazard communication, medical surveillance, decontamination, new technology, material handling, training, and emergency response. The emergency response paragraph (p)(8) also applies to large quantity and small quantity generators. Conditionally exempt generators who will not involve their personnel in the emergency response must only comply with 29 CFR Part 1910.38, *Emergency Action Plans*.

7.4.5. Contamination Avoidance and Decontamination. There must be procedures to minimize worker contact with hazardous wastes or with equipment that has contacted hazardous wastes. [29 CFR Part 1910.120(k) and (p)(4)]

7.5. Additional Sources of Information. There are multiple sources for information concerning hazardous waste, including Federal, state, and local regulations, Air Force publications, and national consensus standards. Air Force Occupational Safety and Health Standards provide an excellent source of information for identifying and complying with health and safety requirements. Many of the AFOSH Standards were developed to help the Air Force implement specific OSHA regulations. State and local environmental authorities can assist in determining installation specific requirements. Each installation maintains a staff of technical specialists (fire, safety, military public health, bioenvironmental engineering services, and environmental management) who are there to assist all generating activities in meeting and maintaining compliance.

7.6. Applicable AFOSH Standards:

7.6.1. AFOSH Standard 91-31, *Protective Clothing and Other Equipment*.

7.6.2. AFOSH Standard 91-32, *Emergency Shower and Eyewash Units*.

7.6.3. AFOSH Standard 91-43, *Flammable and Combustible Liquids*.

7.6.4. AFOSH Standard 91-56, *Fire Protection and Prevention*.

7.6.5. AFOSH Standard 91-68, *Chemical Safety*.

7.6.6. AFOSH Standard 48-1, *Respiratory Protection Program*.

7.6.7. AFOSH Standard 48-8, *Controlling Exposures to Hazardous Materials*.

7.6.8. AFOSH Standard 48-21, *Hazard Communication*.

Federal Requirements Summary

Large Quantity (LQ); Small Quantity (SQ); Conditionally Exempt Small Quantity (CEQ); Permitted Storage Facility (PSF)					
Element	Standard	LQ	SQ	CEQ	PSF
Ignitable, Reactive, or Incompatible Wastes	40 CFR Part 264/265.17	✓	✓		✓
	29 CFR Part 1910.120	✓	✓		✓
Use and Management of Containers:	40 CFR Part 264/265 Subpart I				
Condition of Containers	40 CFR Part 264/265.171	✓	✓		✓
Compatibility of Waste with Container	40 CFR Part 264/265.172	✓	✓		✓
Management of Containers	40 CFR Part 264/265.173	✓	✓		✓
Inspections	40 CFR Part 264/265.174	✓	✓		✓
Containment	40 CFR Part 264.175	✓	✓		✓
Incompatible Wastes	40 CFR Part 264/265.177	✓	✓		✓
Examples	40 CFR Part 264/265 Appendix V	✓	✓		✓
Aisle Space	40 CFR Part 264/265.35	✓	✓		✓
Tank Systems:	40 CFR Part 264/265 Subpart J				
General Operating Requirements	40 CFR Part 264/265.194	✓			✓
Inspections	40 CFR Part 264/265.195	✓			✓
Ignitable or Reactive Wastes	40 CFR Part 264/265.198	✓			✓
Incompatible Wastes	40 CFR Part 264/265.199	✓			✓
Special Requirements	40 CFR Part 265.201(e)		✓		✓

Chapter 8

TRAINING

8.1. Overview. All personnel involved in handling hazardous waste must be trained in proper waste management procedures to include all EPA, OSHA, and DOT requirements. OSHA training requirements for hazardous waste operations and emergency response can be found in AFI 32-4002, *Hazardous Materials Emergency Planning and Response Compliance*. [40 CFR 262.34(a)(4) and (d)(5)(iii), 264/265.16, 29 CFR 1910.120(q), 29 CFR 1910.1200(h)(2), Subpart H of 49 CFR Part 172, and 49 CFR 177.816]

8.2. Personnel Requiring Training. All Air Force personnel whose jobs entail working with hazardous waste (handle, monitor, or dispose of) must be properly trained prior to performing any tasks involving hazardous waste.

This includes, but is not limited to, persons who perform the following: decide which wastes are hazardous waste; complete hazardous waste manifests, annual reports, or exception reports; fill hazardous waste containers or tanks; remove hazardous waste from accumulation tanks or containers; transport hazardous wastes to or from storage and treatment units and disposal facilities; transport hazardous waste to or from accumulation sites; perform hazardous waste clean-up (non-emergency response); inspect hazardous waste accumulation sites, storage, treatment, or disposal facilities; operate accumulation sites; work at permitted or interim status TSDFs; collect hazardous waste samples; and conduct other hazardous waste related activities as designated by installation commanders or their environmental managers.

8.3. Training Frequency. All such personnel must successfully complete initial and annual refresher hazardous waste training. All supervisors of personnel performing hazardous waste activities must successfully complete hazardous waste management training before they supervise hazardous waste operations.

8.4. Who Conducts Training. The environmental management office is responsible for ensuring hazardous waste management training is accomplished. All Air Force hazardous waste management training instructors must be properly trained. Training sources may include the Air Force Training program (see below), the Air Force Institute of Technology, the Air Force School of Aerospace Medicine, or commercial sources.

8.5. Air Force Training Programs. There are two general components to the training required by RCRA and OSHA: how to perform duties in a way that ensures the facility's compliance with all regulations and how to respond to emergencies involving hazardous waste. The Air Force has developed a slide presentation and an interactive (computer-based) training program to help meet Federal hazardous waste training requirements. The programs are geared to flightline, maintenance, and other AF personnel who generate and transport hazardous waste. To fully comply with all regulations, both programs must be tailored to meet each installation's specific requirements. Unique procedures for waste determination, accumulation, transportation, and turn-in, must be incorporated into the training program, along with an installation's specific emergency response procedures. All hazardous waste training must cover, at minimum, the training elements listed in Table 8.1., to include the most current Federal, state, and local requirements.

8.6. Customizing Training. Each training course offering must be customized to fit the specific hazardous waste management requirements of the attendees. Arrange training for similar activities at the same time. For example, present one course offering for installation activities that generate hazardous waste as a result of painting operations (e.g., the civil engineers paint shop, aircraft painting operations, missile maintenance, etc.); another offering for activities that generate hazardous waste from cleaning and degreasing operations (e.g., transportation, aircraft maintenance, etc.),

and another for operators of the hazardous waste storage facility.

8.6.1. Administrative Personnel. Some personnel are involved in hazardous waste management from an administrative perspective only, such as bioenvironmental engineering services technicians who collect samples for analytical analysis, public affairs personnel who field requests for information, the installation commander who signs the hazardous waste manifests, and the judge advocates who are involved in permit applications. Provide specific training which allows them to conduct their responsibilities in a manner which complies with the regulations.

8.6.2. Emergency Responders. Some personnel are only involved with hazardous waste when they respond to emergencies, such as the fire department, the disaster response group, the HAZMAT Response Team, and other emergency responders. The training requirements for emergency responders can be found in AFI 32-4002, *Hazardous Materials Emergency Planning and Response Compliance*.

8.6.3. Hazardous Waste Training Matrix. Table 8.2 provides a matrix identifying which sections of the *Air Force Hazardous Waste Management* (slide) Training program and the *Interactive* (computer-based) Training for Hazardous Waste Management program to help customize training for specific organizations or functions.

8.7. Hazard Communication Training. Although 29 CFR Part 1910.1200, *Hazard Communication Standard*, does not specifically apply to hazardous waste, the DoD *Federal Hazard Communication Program* (AFOSHTD 161-21-1W and AFOSHTD 161-21-1G) can be used to help train personnel in the hazards, harms, general precautions and procedures for hazardous wastes.

8.8. Training Documentation. Training records must document previous training received, type of present training, date, instructor, test score, and projected date of refresher training. Training records must be maintained as long as the individual is associated with, or for three years after the individual is no longer working with, hazardous waste. There are two methods for documenting training. Individual supervisors must use AF Form 1098, Special Task Certification and Recurring Training, or the installation hazardous waste instructor may also maintain the hazardous waste centralized records. [40 CFR 264/265(d) & (e)]

Table 8.1. Hazardous Waste Training Requirements.

<p style="text-align: center;">Hazardous Waste Training Elements</p> <p>This table identifies the minimum hazardous waste training elements to meet EPA, OSHA, and Air Force requirements. Installation-specific information, listed below the elements as bullets, should be added to ensure that the training program meets state and local regulatory requirements. Installation-specific information which <u>must</u> be added is presented in <i>italic</i> letters.</p>
<p>Section I: Introduction to the Resource Conservation and Recovery Act:</p> <ul style="list-style-type: none"> • Add names and telephone phone extensions of installation personnel who can be contacted for additional information regarding the installations' hazardous waste management plan.
<p>Section II: Hazardous Waste Characterization:</p> <ul style="list-style-type: none"> • <i>Typical characteristic and listed hazardous wastes generated on-base</i> • Photos of installation activities that generate HW
<p>Section III: Container Management:</p> <ul style="list-style-type: none"> • <i>How should empty containers be managed and where should they be taken</i> • <i>Location of the Hazardous Materials Table</i> • How to obtain containers for hazardous waste accumulation • Installation-specific container marking requirements, beyond those required by EPA and DOT
<p>Section IV: Hazardous Waste Accumulation Management:</p> <ul style="list-style-type: none"> • <i>Locations of on-base accumulation points and satellite accumulation points together with a designation of each point's accumulation point manager and wastes accepted</i> • Installation procedures for setting up new accumulation points and satellite accumulation points • <i>How to obtain and replenish emergency equipment and other supplies for accumulation point.</i> • <i>Installation waste segregation procedures, such as drum color coding, labeling, etc.</i> • <i>Accumulation point inspection and record keeping responsibilities; identify who must conduct weekly inspections (daily inspections for tanks) and where records of inspections and training are maintained</i>

Table continued on next page.

Table 8.1. Continued.

<p>Section V: Hazardous Waste Disposal:</p> <ul style="list-style-type: none"> • Local procedures for turn-in • Procedures for on-installation transportation of hazardous waste in containers or tanks from satellite accumulation points to accumulation points and from accumulation points to permitted storage facilities; identify if on-base transportation is accomplished by the organization that generates waste, the Transportation Squadron, or others • Procedures for requesting waste analyses
<p>Section VI: Hazardous Waste Manifesting and Transportation:</p> <ul style="list-style-type: none"> • Proper packaging for shipping • Where manifests may be obtained at your facility • <i>Who completes, coordinates, approves, and signs hazardous waste manifests</i> • Where manifest records are maintained • Telephone number for reporting releases to the Installation Command Post
<p>Section VII: Emergency Procedures and Prevention:</p> <ul style="list-style-type: none"> • <i>Procedures for reporting releases, spills, fires, and explosions</i> • <i>Location and availability of the contingency requirements in HAZMAT Plan</i> • <i>Telephone numbers and/or other means for contacting Emergency Coordinator, and Command Post</i> • <i>Locations where emergency response and decontamination equipment is stored</i> • <i>Specific procedures and roles on how to respond to releases, spills, fires, and explosions involving the hazardous wastes generated at the installation</i> • Local prevention program
<p>Section VIII: Personnel Safety and Training:</p> <ul style="list-style-type: none"> • Hazard warning labels that may be used on containers or tanks bearing hazardous chemicals at the installation • Who should be contacted for specific information on the physical properties or health and safety aspects of hazardous chemicals • Location and availability of reference materials (e.g. the Hazardous Materials Information System, material safety data sheets, handbooks, etc.) which can be used to obtain safety information • <i>Identify the personal protective equipment which must be worn when working with specific types of hazardous waste generated at the installation</i>
<p>Section IX: Waste Minimization:</p> <ul style="list-style-type: none"> • <i>Installation's waste minimization program</i>
<p>Section X: Record Keeping and Reporting Requirements:</p> <ul style="list-style-type: none"> • <i>State and local reporting and record keeping requirements</i> • <i>Procedures for installation record keeping</i>

Table 8.2. Hazardous Waste Training Matrix.

Organization/Function	Section									
	I	II	III	IV	V	VI	VII	VIII	IX	X
Accumulation Point Managers	■	■	■	■	■	■	■	■	■	■
Generating Activities	■	■	■	■	■		■	■	■	■
Emergency Response Personnel	■	■		■			■	■	■	
Hazardous Waste Contract Administration Personnel	■	■	■	■	■	■	■	■	■	■
Bioenvironmental Engineering Technician	■	■	■	■	■	■	■	■	■	■
Judge Advocate General	■	■	■	■	■	■	■	■	■	■
Transportation	■	■	■			■	■	■	■	■
Environmental Management Flight	■	■	■	■	■	■	■	■	■	■
Quality Assurance Evaluator	■	■	■	■			■	■	■	■
Base Supply	■	■		■	■		■	■	■	■
Ground Safety	■	■					■	■	■	
Air Force Hazardous Waste Management Training Program <ul style="list-style-type: none"> • Section I - Introduction to Resource Conservation and Recovery Act • Section II - Identification of Hazardous Wastes • Section III - Container Use, Marking, and Labeling • Section IV - Accumulation Site Management • Section V - Waste Turn-In Procedures • Section VI - Manifesting and Transportation of Hazardous Waste • Section VII - Spill Prevention and Response to Emergencies • Section VIII - Waste Minimization • Section IX - Personnel Safety 					Interactive Training for Hazardous Waste Management <ul style="list-style-type: none"> • Section I - Introduction • Section II - Characterization of Hazardous Waste • Section III - Container Management • Section IV - Waste Accumulation Management • Section V - Waste Turn-In Procedures • Section VI - Transporting Hazardous Waste • Section VII - Emergency Procedures and Preparedness • Section VIII - Pollution Prevention • Section IX - Personnel Safety • Section X - Reports and Record Keeping 					

Federal Requirements Summary

Large Quantity (LQ); Small Quantity (SQ); Conditionally Exempt Small Quantity (CEQ); Permitted Storage Facility (PSF)					
Element	Standard	LQ	SQ	CEQ	PSF
Personnel Training:					
Hazardous Waste	40 CFR Part 262.34(d)(5)(iii) 40 CFR Part 264/265.16	✓	✓		✓
Emergency Action Plans	29 CFR Part 1910.38			✓ *	✓
TSDF Emergency Response * (see Notes and Exceptions)	29 CFR Part 1910.120(p)(7) & (8) 29 CFR Part 1910.120(a)(2)(iii)	✓ *	✓ *		✓
Installation Emergency Response	29 CFR Part 1910.120(q)(6)	✓	✓	✓	✓
Transportation	49 CFR Parts 172.701, 702, 704 49 CFR Part 177.816	✓	✓	✓	✓
Training Records	29 CFR § 1910.120(p)(8)(iii) 29 CFR § 1910.120(q)(6) 40 CFR § 264/265.16(d) & (e)	✓ ✓	✓	✓	✓ ✓

Chapter 9

WASTE MINIMIZATION

9.1. Overview. Reducing generation of hazardous waste to a minimum is an important objective of pollution prevention. Pollution prevention is a departure from years of end-of-the-pipe waste management practices. It establishes a cradle-to-grave approach to waste management. It focuses on planning for and evaluating the use of materials, processes, or practices in order to reduce or eliminate wastes at the source before they become an environmental problem. The goal of pollution prevention is to establish a long-term downward trend in the volume of wastes generated and contaminants and pollutants released to the environment. By achieving this goal, the costs resulting from reactionary waste management practices and dependence on hazardous materials use will also be greatly reduced.

9.2. Air Force Pollution Prevention Program. The Air Force has developed a proactive pollution prevention policy which calls for the reduction of hazardous material use and releases of pollutants into the environment to as near zero as feasible. All Air Force installations are required to prepare a Pollution Prevention Management Plan which accomplishes the following:

- Establishes reduction baselines for the following six areas: the EPA's 17 Priority Pollutants (see table 3.8), ozone depleting chemicals (ODCs), items containing recycled content, Emergency Planning

and Community Right-to-Know Act chemicals, municipal solid waste (MSW) and hazardous waste;

- Measures progress toward objectives; and
- Identifies projects needed to achieve the pollution prevention objectives and documents the programs to accomplish those projects.

9.2.1. Pollution Prevention Management Plan Goals.

Goals for pollution prevention are established in the Air Force Pollution Prevention Plan (7 January 1993). The goal of reducing hazardous waste by 25% from a 1992 baseline by 1995 and 50% from the 1992 baseline by 1999 are directly applicable to hazardous waste generating activities. Projects which demonstrate how an installation will achieve these goals should be identified in the installation's Pollution Prevention Management Plan.

9.2.2. The Pollution Prevention Management Plan should also address affirmative procurement of environmentally friendly products, energy conservation, and air and water pollutant reduction. Many pollutant reduction methods can be identified through opportunity assessments.

9.3. Waste Minimization Hierarchy. The Pollution Prevention Act (PPA) of 1990, encourages waste generators to adopt new principals guiding waste management practices. There is a hierarchy of waste minimization practices and management options to assist

in the reduction and elimination of hazardous material use and waste generation. The hierarchy (see table 9.1) includes investigating *source reduction* as the primary means of reducing pollution, reviewing *recycling* alternatives after all source reduction options have been examined, considering *treatment* after recycling and source reduction has been deemed unfeasible, and using *disposal* only as the last resort after all other options have been exhausted.

9.4. Team Approach. Program implementation requires a team approach. All Air Force members have a role and responsibility to enhance the environmental quality at their installation. Worker training, awareness, and compliance are integral to a successful program. Pollution prevention will only succeed with a commitment from all levels of personnel and a commitment from all levels of management to support environmental awareness and promote continuous improvement.

9.5. Benefits of Pollution Prevention. There are strong incentives to reduce both the volume and toxicity of the waste generated and hazardous materials used at installations. An efficient, continuous Pollution Prevention Program results in the following advantages:

- 9.5.1. Reduced overall waste treatment costs;
- 9.5.2. Reduced manpower and equipment requirements for pollution control and treatment;
- 9.5.3. Reduced transportation and disposal costs for off-site disposal;
- 9.5.4. Decreased record-keeping requirements;
- 9.5.5. Reduced liability costs (reduce or eliminate fines for non-compliance);
- 9.5.6. Reduced operating costs through more efficient use of materials (decreased energy costs);
- 9.5.7. An improved image in the community;
- 9.5.8. Reduced operating costs through the use of more efficient technologies; and
- 9.5.9. Reduced impact on public health and environment, which can help foster good relationships with regulators.

9.6. Pollution Prevention Regulatory Requirements. Several Federal regulations have begun to focus on source reduction in lieu of end-of-the-pipe treatment, though the primary focus of existing Federal laws is still on single-media compliance and clean-up. Some laws and regulations contain waste minimization or source reduction requirements.

9.6.1. Pollution Prevention Act (PPA). The PPA states the national policy of the United States is that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the

environment should be employed only as a last resort and should be conducted in an environmentally safe manner. The PPA requires source reduction and recycling data to be provided by facilities on the annual toxic chemical release form under section 313 of the Superfund Amendments and Reauthorization Act of 1986 (SARA). AFI 32-7080, *Pollution Prevention Program*, implements the PPA.

9.6.2. RCRA. The RCRA biennial report must describe efforts undertaken during the year to reduce the volume and toxicity of waste generated, and changes in volume and toxicity of waste achieved during the year in comparison to previous years. Hazardous waste manifests require certification that a program is in place to minimize wastes. Recently, EPA has outlined the requirements for ensuring that a waste minimization program is in place in its *Interim Final Guidance on the Elements of a Waste Minimization Program*. The requirements outlined in this guidance are similar to those outlined in the Air Force pollution prevention program.

9.6.3. Executive Order 12586. EO 12586, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*, 3 August 1993, requires all Federal Agencies to establish guidelines to comply with the requirements of the Emergency Planning and Community Right-to-Know Act, also known as SARA Title III. Section 313 of SARA Title III requires the reporting of toxic chemical emissions over the threshold levels established. Federal facilities are required to provide documentation of procedures for preventing the releases of or for reusing these substances on the U.S. EPA Form R, the Toxic Chemical Release Reporting Form, for inclusion in the Toxic Release Inventory (TRI) database.

9.6.4. Executive Order 12873. EO 12873, *Federal Acquisition, Recycling, and Waste Prevention*, 20 October 1993, requires Federal agencies to incorporate waste prevention (source reduction) and recycling in the agency's daily operations and work to increase and expand markets for recovered materials through greater Federal Government preference and demand for such products. Agencies must establish policies to acquire and use environmentally preferable products and services and implement cost-effective procurement preference programs favoring the purchase of these product and services. Hazardous waste minimization is a key to meeting EO 12873.

9.6.5. State Laws. A large number of states have pollution prevention or waste minimization laws that may also be applicable to an Air Force Installation's Pollution Prevention Management Plan. Local environmental authorities can provide additional insight regarding the requirements posed by existing pollution prevention, source reduction, and waste minimization laws.

9.7. Meeting Pollution Prevention Goals. There are many ways to assist the Air Force in meeting its Pollution Prevention goals. Each individual that handles or generates hazardous wastes plays an important role in implementing pollution prevention. One of the simplest, most efficient ways of instituting pollution prevention is through the implementation of best management practices. Best management practices such as knowing what wastes may be hazardous, keeping them segregated from non-hazardous wastes, inventory management, and disposing of wastes properly are the first steps toward achieving waste reductions in your shop. Perhaps less material is required than currently used, maybe some of the wastes that are disposed of can be recycled, perhaps less hazardous materials can be used in the processes resulting in little or no hazardous waste generation.

Creativity and efficiency are integral to pollution prevention. Many engineering options are also being instituted such as bead blasting devices to strip paint off of aircraft. This practice eliminates the need for the use of hot and cold stripper, is less hazardous to the worker, and generates significantly less waste than the previously used process. Methods such as this can save the Air Force money and prevent pollution.

9.8. Quarterly Summaries. The environmental manager provides quarterly summaries of hazardous waste generation data, prior year data, and year minimization base year data to the installation Environmental Protection Committee (EPC) for evaluating progress in minimizing hazardous waste.

Table 9.1. Waste Minimization Management Options Hierarchy.

Method	Example Activities	Example Applications
Source Reduction (Highest Priority) <i>This is Pollution Prevention.</i>	<ul style="list-style-type: none"> • Process Changes <ul style="list-style-type: none"> •• Input Material Changes •• Technology Changes •• Improved Operating Practices (<i>usually the quickest and most cost effective</i>) • Product Changes • Source Elimination 	<ul style="list-style-type: none"> • Inventory Control • Waste Segregation • Established Procedures and Training • Improved Equipment • Substitution with Less Toxic Material in Process • Modify Product to Avoid Solvent Use • Modify Product to Extend Coating Life
Recycling <i>This is Pollution Control.</i>	<ul style="list-style-type: none"> • Reuse • Reclamation 	<ul style="list-style-type: none"> • Closed-Loop Recycling/Reuse • Solvent Recycling (<i>off-site</i>) • Metal Recovery from a Spent Plating Bath • Volatile Organic Compounds (VOC) Recovery
Treatment <i>This is Pollution Control.</i>	<ul style="list-style-type: none"> • Stabilization • Encapsulation • Neutralization • Precipitation • Evaporation • Incineration • Scrubbing • Volume Reduction 	<ul style="list-style-type: none"> • Thermal Destruction of Organic Solvent • Precipitation of Heavy Metal from Spent Plating Bath
Disposal <i>This is Pollution Control.</i>	<ul style="list-style-type: none"> • Disposal at a Permitted Facility 	<ul style="list-style-type: none"> • Land Disposal

Chapter 10

HAZARDOUS WASTE MANAGEMENT PLAN

10.1. Overview. A hazardous waste management plan is an installation developed document which provides specific guidance to installation personnel for hazardous waste management and pollution prevention. All Air Force installations must develop and implement a comprehensive hazardous waste management plan. The plan incorporates applicable current DoD, Air Force, EPA, OSHA, DOT, State or host nation, and local requirements regarding the management of hazardous waste as they relate to environmental protection, worker safety, and transportation during operations conducted at

the installation. If the Defense Reutilization and Marketing Office is used as a disposal agent, the plan must also incorporate the hazardous waste turn-in requirements in DoD 4160.21-M, *Defense Reutilization and Marketing Manual* with change 1. Attachment 2 contains a sample hazardous waste management plan.

10.2. Hazardous Waste Management Plan Elements.

The hazardous waste management plan must contain, as a minimum, the following elements listed:

Hazardous Waste Management Plan Elements:

- Letter of Instruction
- Information and Emergency Contacts.
- Introductory Materials
- Introduction.
- Responsibilities
- Organizational Chart.
- Location Maps
- Waste Inventory
- Waste Analysis Plan
- HW Management Procedures
- Reporting
- Training
- Contingency Plan
- Preparedness & Spill Prevention
- Pollution Prevention

10.2.1. **Letter of Instruction.** The plan should be implemented with a facility-wide instruction signed by the installation commander. This endorsement will mandate compliance with the plan by all activities generating or otherwise involved in the management of hazardous waste.

10.2.2. Information and Emergency Contacts.

Although the plan is not intended to be a replacement for the installation HAZMAT plan (see chapter 6), a current list of information and emergency contacts should be included as the first page of the plan. At a minimum, this list should include telephone numbers and extensions for the organizations listed in table 10.1.

Table 10.1. Information and Emergency Contacts.

On-Installation Contacts: <ul style="list-style-type: none"> • Fire Department • Emergency Medical Care • Command Post • Civil Engineer Service Call • Environmental Manager • Bioenvironmental Engineering Services • Ground Safety Officer • Public Affairs Officer • Contracting Officer • Staff Judge Advocate 	MAJCOM Contacts: <ul style="list-style-type: none"> • Command Post • Environmental Planning
EPA Regional Office (or equivalent host nation environmental agency office)	National Response Center: 1-800-424-8802
Local Community Emergency Response/Reporting Agency	State Emergency Response/Reporting Agency

10.2.3. Introductory Materials. The hazardous waste management plan should include the following items which will assist the user in finding and implementing applicable portions of the plan.

10.2.3.1. Table of contents.

10.2.3.2. Record of Annual Review. The hazardous waste management plan should be reviewed annually by the installation environmental manager. As part of this review, the following should be accomplished.

10.2.3.2.1. Each organization which uses hazardous materials or generates hazardous waste should be contacted to determine if there have been any changes in the type or volume of wastes generated or hazardous materials management procedures which have not yet been documented in the plan.

10.2.3.2.2. Changes in DoD, Air Force, EPA, OSHA, DOT, host nation, and state and local regulations and policies should be reviewed and compared to the hazardous waste management plan to identify plan guidance and procedures which require modification.

10.2.3.2.3. The plan should be revised and coordinated through applicable installation organizations.

10.2.3.2.4. The person that conducted the review should add his or her name, date, and remarks to the record of annual review. The HAZMAT Planning team should be involved in the review process.

10.2.3.2.5. Copies of the hazardous waste management plan revisions should be distributed to organizations to which the original plan was distributed.

10.2.3.3. Record of Changes. If any changes in the hazardous waste management plan are made, the change number, name of person entering the changes, and the date of the change should be added to the record of changes.

10.2.3.4. Lists of Tables and Figures.

10.2.4. Introduction. This section should present the goals of the installation's hazardous waste management efforts. It may also include a brief overview of the scope of Air Force, Federal, state, and installation requirements and procedures for the management of hazardous waste.

10.2.5. Responsibilities. The duties and responsibilities of all personnel and organizations involved with the management of hazardous waste or who are otherwise involved in the implementation of the hazardous waste management plan should be summarized in this section. This will outline the organization's and individual's taskings and responsibilities and provide a basis for determining performance. This section will describe responsibilities for weighing their hazardous waste going to disposal and identify DoD authorized representatives that are responsible for verifying accuracy of weight measurements. Installation responsibilities for ensuring the hazardous waste management plan is updated as necessary when changes have occurred in applicable Federal, state, interstate, and local hazardous waste laws should also be included.

10.2.6. Organizational Chart. A chart showing all of the installation's units and tenants. This item is included for the benefit of the regulators that will be reviewing the plan.

10.2.7. Location Maps. The location map should show the perimeter of the installation, main streets, and buildings and the areas where hazardous waste is generated, stored, and treated. Generating activity maps should identify the location at each facility where hazardous waste is accumulated, stored, and treated. These maps should identify the type of operation (e.g., accumulation site, initial accumulation point, permitted storage, etc.).

10.2.8. Waste Stream Inventory. This section contains a description of the hazardous waste streams generated at each Air Force installation. See paragraph 3.6 and table 3.5 for further information.

10.2.9. Waste Analysis Plan. Each installation which generates hazardous waste is required to determine which of the wastes they generate are classified as hazardous waste in accordance with 40 CFR Part 261. Every Air Force installation that generates hazardous waste will have a waste analysis plan that is included in this section of the hazardous waste management plan which shows how this determination is made. See paragraph 3.4.1. for further information.

10.2.10. Waste Management Procedures. This section contains the proper procedures for waste characterization, accumulation, labeling, marking, record keeping, handling, transportation, treatment, storage, and disposal. It provides generating activities with detailed procedures for each operation involving hazardous waste management in accordance with Air Force regulations and policies as well as the regulations promulgated by the EPA (40 CFR Parts 260 - 271), and state and local agencies. This section is normally divided into four areas: waste accumulation; waste turn-in; operation of permitted facilities; and record keeping.

10.2.10.1. RCRA requires that hazardous waste generators and TSDFs maintain specific records regarding the results of each hazard determination, the quantity of wastes generated, facility inspection, hazardous waste manifests, land disposal notifications, and employee training. Guidance for the development and maintenance of these records is provided throughout the guide. This section of the hazardous waste management plan should identify organizations with specific record keeping requirements, present record keeping forms, and instructions for completion, disposition, and retention of the records.

10.2.11. Reporting. RCRA requires hazardous waste generators and permitted facilities to submit certain reports regarding the types and quantity of wastes generated, environmental releases, and manifest irregularities. This section of the hazardous waste management plan should identify organizations with

specific reporting requirements, present instructions for submission of the reports, and the retention of the records regarding reports submitted.

10.2.12. **Training.** This section should identify personnel who must be trained, the scope of the required training, training frequency, and include a plan for ensuring that all applicable personnel successfully meet the training requirements. Guidance for the development of an installation training plan is presented in chapter 8 of this pamphlet.

10.2.13. **Contingency Plan.** The location and availability of the complete contingency plan should be referenced in the hazardous waste management plan along with a summary of the contingency plan. The summary should identify the conditions under which the plan shall be implemented, and should identify the organizations who should be contacted in the event of a spill, fire, or explosion involving hazardous waste.

10.2.14. **Preparedness & Spill Prevention.** Depending on the type of wastes managed, certain emergency

response equipment must be available on site. The hazardous waste management plan must include the location and required inventory of the spill cleanup equipment for each initial accumulation point, accumulation site, TSDF, and all other locations where spill cleanup equipment and supplies are stored. If it is foreseeable that off-site organizations, such as the local fire department, police department, hospital, spill response team, etc., may be called upon to assist in responding to an incident involving hazardous waste, agreements with these organizations must be made which document their ability to assist the installation. The hazardous waste management plan should refer to these agreements and copies should be placed in the HAZMAT plan.

10.2.15. **Pollution Prevention.** Pollution prevention will be an executive management strategy that may be attached to the hazardous waste management plan or a stand-alone plan that is referenced by the hazardous waste management plan. See chapter 9 for further guidance.

JAMES E. McCARTHY, Maj General, USAF
The Civil Engineer

GLOSSARY OF REFERENCES, ABBREVIATIONS, ACRONYMS, AND TERMS

References

- Public Law 94-580, *Resource Conservation and Recovery Act of 1976*, 42 United States Code (U.S.C.), Sections 6901, et seq.
- Public Law 96-510, *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, 42 U.S.C. Sections 9602, et seq.
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- Public Law 99-499, *The Emergency Planning and Community Right-to-Know Act of 1986*, 42 U.S.C., Sections 11001, et seq.
- Executive Order 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*, 3 August 1993
- Executive Order 12873, *Federal Acquisition, Recycling, and Waste Prevention*, 20 October 1993
- Title 49, Code of Federal Regulations, *Hazardous Materials Regulations*, Parts 171-178
- Title 40, Code of Federal Regulations, *Hazardous Waste Regulations*, Parts 260-268
- Title 29, Code of Federal Regulations, Part 1910.120, *Hazardous Waste Operations and Emergency Response*
- Title 29, Code of Federal Regulations, Part 1910.1200, *Hazard Communication Standard*
- DoD 4160.21-M, *Defense Reutilization and Marketing Manual* with change 1, 30 April 1994
- DoDD 5100.50, *Protection and Enhancement of Environmental Quality* with changes 1 and 2, 24 May 1973
- DoDD 6050.8, *Storage and Disposal of Non-DoD-Owned Hazardous or Toxic Materials on DoD Installations*, 27 February 1986
- DoD 6055.9-STD, *DoD Ammunition and Explosives Safety Standards*, 30 October 1992
- AFPD 32-70, *Environmental Quality*
- AFI 32-4002, *Hazardous Materials Emergency Planning and Response Compliance*
- AFI 32-7042, *Solid and Hazardous Waste Compliance*
- AFI 32-7045, *Environmental Compliance Assessment and Management Program*
- AFI 32-7001 *Environmental Budgeting*
- AFI 32-7080, *Pollution Prevention Program*
- AFI 48-119, *Medical Service Environmental Quality Programs*
- DRMS-M 6050.1, *Environmental Compliance for the DRMS Hazardous Property Program*
- AFMAN 64-108, *Service Contracts*
- AFPAM 32-4013, *Hazardous Materials Emergency Planning and Response Guide*
- AFOSH Standard 91-31, *Protective Clothing and Other Equipment*
- AFOSH Standard 91-32, *Emergency Shower and Eyewash Units*
- AFOSH Standard 91-43, *Flammable & Combustible Liquids*
- AFOSH Standard 91-56, *Fire Protection and Prevention*
- AFOSH Standard 91-68, *Chemical Safety*
- AFOSH Standard 48-1, *Respiratory Protection Program*
- AFOSH Standard 48-8, *Controlling Exposures to Hazardous Materials*
- AFOSH Standard 48-21, *Hazard Communication*
- AFOSHTD 161-21.1W and AFOSHTD 161-21.1G, *DoD Federal Hazard Communication Training Program*
- DoT, *Emergency Response Guidebook*, Latest Edition (Sources: American Trucking Association, 1-800-ATA-LINE; Labelmaster, 1-800-621-5808; and J.J. Keller & Associates, 1-800-327-6868)
- EPA, *Test Methods for Evaluating Solid Waste, Volumes 1a through 1c and Volume 2, Field Manual, Physical/Chemical Methods, Third Edition* EPA SW-846, Order Number: PB 88239223, Cost \$154.00 (Source: National Technical Information System, 5285 Port Royal Road, 703-487-4650)
- EPA, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Final Update #1*, EPA SW-846, Order Number: PB 94170313, Cost \$112.00 (Source: National Technical Information System, 5285 Port Royal Road, 703-487-4650)
- EPA, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Proposed Update #2*, EPA SW-846, Order Number: PB 94170321, Cost \$126.00 (Source: National Technical Information System, 5285 Port Royal Road, 703-487-4650)
- EPA, *Guidance to Hazardous Waste Generators on the Elements of a Waste Minimization Program, Interim Final Guidance*, Federal Register, Volume 58, No. 102, 28 May 1993 (Source: RCRA Hotline, 1-800-535-0202 or 1-800-424-9346)

FEMA/DoT/EPA, *Handbook of Chemical Hazard Analysis Procedures* (Source: RCRA/CERCLA/EPCRA Hotline, 1-800-535-0202 or 1-800-424-9346)

National Fire Protection Association Standard 30, *Flammable and Combustible Liquids Code* (Source: National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9904, 1-800-344-3555)

The Hazardous Waste Consultant, McCoy and Associates (Source: McCoy and Associates, 13701 West Jewell Avenue, Suite 252, Lakewood, Colorado 80228)

Abbreviations and Acronyms

AFCESA	Air Force Civil Engineer Support Agency
AFI	Air Force Instruction
AFMC	Air Force Materiel Command
AFO	Accounting and Finance Office
AFOSH	Air Force Occupational Safety and Health
AFPAM	Air Force Pamphlet
AFRES	Air Force Reserve
AS	Accumulation Site
BDAT	Best Demonstrated Achievable Technology
BEE	Bioenvironmental Engineer
BES	Bioenvironmental Services
BMP	Best Management Practice
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CBT	Computer Based Training
CCW	Constituent Concentrations in Waste
CCWE	Constituent Concentrations in Waste Extract
CE	Civil Engineer
CEQ	Conditionally Exempt Small Quantity Generator
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended.
CFR	Code of Federal Regulations
CLIN	Contract Line Item Number
CONUS	Continental United States
CWA	Clean Water Act
DoD	Department of Defense
DoDAAC	DoD Activity Address Code
DoT	Department of Transportation
DoE	Department of Energy
DRMO	Defense Reutilization and Marketing Office
DRMS	Defense Reutilization and Marketing Service
DTID	Disposal Turn-in Document
ECAMP	Environmental Compliance Assessment Management Program
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
EPC	Environmental Protection Committee
EPCRA	Emergency Planning and Community Right-To-Know Act of 1986
FFCA	Federal Facility Compliance Act of 1992
FR	Federal Register
FOA	Field Operating Agency
GOCO	Government Owned Contractor Operated
HAZMAT	Hazardous Material
HMIS	Hazardous Materials Information System
HMT	Hazardous Materials Table (49 CFR § 172.101)
HMTA	Hazardous Materials Transportation Act
HQ	Headquarters
HSWA	Hazardous and Solid Waste Act
HW	Hazardous Waste

HWAP	HW Analysis Plan
HWMP	HW Management Plan
HWPS	HW Profile Sheet
IAP	Initial Accumulation Point
IBS	Interfund Billing System
IC	Incident Commander
ICS	Incident Command System
IM	Inter-modal
IRP	Installation Restoration Program
LDR	Land Disposal Restriction
LEPC	Local Emergency Planning Committee
LQ	Large Quantity Generator
MAJCOM	Major Command
MIPR	Military Interdepartmental Purchase Request
MSDS	Material safety data sheets
NA	North American
NGB	National Guard Bureau
NRC	National Response Center
NSN	National Stock Number
OEL	Occupational Exposure Limit
OPA	Oil Pollution Act of 1990
OPR	Office of Primary Responsibility
OSC	On-Scene Commander
OSHA	Occupational Safety and Health Act
PCB	Polychlorinated Biphenyl
PEL	Permissible Exposure Limit
PSF	Permitted Storage Facility
PG	Packing Group
PPE	Personal Protective Equipment
PPMP	Pollution Prevention Management Plan
RCRA	Resource Conservation and Recovery Act of 1976, as amended
RQ	Reportable Quantity
SAF	Secretary of the Air Force
SARA	Superfund Amendments and Reauthorization Act of 1986
SERC	State Emergency Response Commission
SPCC	Spill Prevention, Control and Countermeasures
SQ	Small Quantity Generator
SWDA	Solid Waste Disposal Act
TC	Toxicity Characteristics
TCLP	Toxicity Characteristic Leaching Procedure
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, and Disposal Facility
TSD	Treatment, Storage, and Disposal
TLV	Threshold Limit Value
TWA	Time Weighted Average
UN	United Nations
WIMS-ES	Work Information Management System-Environmental Subsystem

Terms

Contingency Plan--A document setting out an organized, planned, or coordinated course of action to be followed in case of fire, explosion, or release of hazardous waste or hazardous waste constituents which threaten human health or the environment.

Emergency Coordinator--Person responsible for handling hazardous waste releases and emergencies under the Resource Conservation and Recovery Act.

Environment--Includes water, air, or land and the interrelationship which exists among and between water, air, and land and all living things.

Environmentally Preferable--Products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product or service.

Extremely Hazardous Substance--Any substance listed in appendix A or appendix B of 40 CFR 355. Appendix A is an alphabetical listing of extremely hazardous substances. Appendix B lists extremely hazardous substances in order of each substance's Chemical Abstracts Service registry number.

Facility--For emergency planning purposes, the term "facility" in 40 CFR 355, as it applies to the Air Force, is considered equivalent to an "installation."

Hazardous Substance--Any substance listed in 40 CFR 302, table 302.4.

HAZMAT--All hazardous substances, petroleum, natural gas, synthetic gas, acutely toxic chemicals, and other toxic chemicals including hazardous waste.

HAZMAT Response Team--Administrative term used to identify the total number of installation personnel assigned and trained to the appropriate level. The purpose of this team is to respond to HAZMAT incidents to prevent or reduce human injury or death, property damage, product loss and environmental damage.

HAZMAT Planning Team--Consists of representatives from disaster preparedness, fire protection, environmental management, bioenvironmental engineering, security police, staff judge advocate, safety, and the HAZMAT response team. Other representatives should augment this team, when appropriate. The HAZMAT planning team establishes and oversees the installation HAZMAT program.

Immediately Dangerous to Life and Health (IDLH)--The maximum level to which a healthy worker can be exposed for 30 minutes and escape **without suffering irreversible health effects or escape impairing symptoms**. These are exposure concentrations established by NIOSH/OSHA as a guideline for selecting respiratory protection. As a rule, IDLH concentrations should be an indication that appropriate respiratory protection is essential.

Incident Commander (IC)--Normally the senior fire official on-scene responsible for all decisions relating to the management of the immediate incident scene. The IC reports to the OSC.

Incident Command System (ICS)--Nationwide system used to manage emergency incidents. Further information on the ICS can be found in National Fire Academy's The Incident Command System, (NFA-ICS-SM), The National Emergency Training Center, 1989; and Emergency Management Institute's Overview of the Incident Command System, (SM305.7), The National Emergency Training Center, 1992.

Lethal Dose (LD)--The single dose of a substance that in laboratory tests is expected to kill a certain amount or percentage of the test animals. It is based on ingestion (oral), absorption (skin) or injection. It can be expressed as milligrams of material per kilogram of animal weight (mg/kg), or grams of material per kilogram of animal weight (g/kg). Two values are normally seen: median lethal dose 50 (LD₅₀); and lethal dose low (LD_{Lo}).

Lethal Concentrations (LC)--The concentration of a material in air that on the basis of laboratory tests is expected to kill a certain amount or percentage of the test animals in a given period of time. It is based on inhalation, with the period of exposure time from one to four hours. It can be expressed as parts of materials per million parts of air, by volume (ppm), milligrams of material per cubic meter of air (mg/m³), or micrograms (one millionth of a gram) of material per liter of air (ug/L). Two values are normally seen: median lethal concentration 50 (LC₅₀); and lethal concentration low (LC_{Lo}).

Local Emergency Planning Committee--A committee established by the state commission for each emergency planning district to plan and coordinate local emergency response actions.

Occupational Exposure Limit (OEL)--The limit for the airborne concentration of a specified substance for a specified time. Refer to AFOSH Standard 161-8, *Controlling Exposures to Hazardous Materials*, for further information.

Oil--Oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

On-Scene Commander--The person designated to coordinate the rescue efforts at the rescue site (JCS Publication 1-02). The senior member, normally the installation or combat support group commander, of the disaster control group. All disaster response force members at an accident scene are under the command and control of the on-scene commander. During a HAZMAT incident response where the Disaster Control Group is activated, all disaster response force members are under the command and control of the OSC. The senior fire official will serve as the OSC until a designated OSC arrives and is briefed on the situation. Under 40 CFR 300, the National Contingency Plan, the term OSC designates a federal on-scene coordinator. Because DOD provides their own coordinator, the on-scene commander fills this role.

Parts Per Million (ppm)--Parts of contaminants per million parts of air or liquid by volume.

Parts Per Billion (ppb)--Parts of contaminants per billion parts of air or liquid by volume.

Permissible Exposure Limit (PEL)--An exposure limit established by OSHA and have the **force of law**. PELs can be found in 29 CFR 1910.1000, Subpart Z, General Industry Standards for Toxic and Hazardous Substances. They are expressed as either 8-hour time weighted averages (TWA), ceiling limits (TLV-C), or short term exposure limits (STEL).

Release--Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles) of any hazardous chemical, extremely hazardous substance, or toxic chemical.

Reportable Quantity--For any CERCLA [The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended] hazardous substance, the reportable quantity is that listed in the "Final RQ" column of table 302.4 in 40 CFR 302. For an EPCRA [Emergency Planning and Community Right-To-Know Act] extremely hazardous substance, the reported quantity is that listed in the "Reportable Quantity" column of appendix A or appendix B in 40 CFR 355.

Threshold Limit Value (TLV)--A TLV is a recommended guideline for good practice published by the American Conference of Governmental Hygienists (ACGIH). TLVs refer to airborne concentrations of substances and represent conditions under which it is believed that nearly all workers may be repeatedly exposed without adverse health effects. TLVs are intended for use by individuals trained in the practice of industrial hygiene; therefore, individuals should seek further information from their installation bioenvironmental engineering services. TLVs are expressed as 8-hour TWAs, ceiling values, or short term exposure limits.

Threshold Limit Value Time Weighted Average (TLV-TWA)--The time weighted average concentration for a normal 8-hour workday and a 40-hour workweek, to which all workers may be repeatedly exposed, day after day, without adverse effect.

Threshold Limit Value Short Term Exposure Limit (TLV-STEL)--A 15 minute TWA exposure which should not be exceeded at any time during the workday. Exposures above the TLV-TWA should not be longer than 15 minutes nor occur more than four times per day, with at least 60 minutes between occurrences. It supplements the TLV-TWA where there are recognized acute effects from a substance whose toxic effects are primarily of a chronic nature.

Threshold Limit Value Ceiling (TLV-C)--Concentration in air that should not be exceeded during any part of a working exposure. Ceiling limits may supplement other units or stand alone.

SAMPLE HAZARDOUS WASTE MANAGEMENT PLAN

(This is a sample only. This plan does not reflect actual conditions or requirements at Andrews Air Force Base.)

ANDREWS AIR FORCE BASE LETTER OF DISTRIBUTION

MEMORANDUM FOR INSTALLATION PERSONNEL

From: Installation Commander

Subject: Andrews AFB Hazardous Waste Management Plan (HWMP)

Enclosure: Hazardous Waste Management Plan, January, 1994

1. A comprehensive and mandatory hazardous waste management plan for Andrews Air Force Base and its tenants is enclosed.
2. The enclosed plan has been prepared in accordance with DoD, Air Force, EPA, OSHA, DoT, and state environmental, worker safety, and transportation requirements. The plan assigns responsibility and provides instruction for appropriate waste handling and management to ensure conformance with the policies established by the agencies listed above.
3. This plan is applicable to all installation activities, tenant organizations, and contractors which generate, treat, store, or respond to releases involving hazardous waste within the confines of Andrews AFB.
4. Implement and comply with the provisions of the hazardous waste management plan at all times.

JOHN J. DOE, Brigadier General, USAF
Wing Commander

Attachment:
Hazardous Waste Management Plan

Andrews Air Force Base Emergency Reporting and Information Numbers			
REPORT ON-BASE EMERGENCIES TO (fires, explosions, releases, or spills)			
Base Fire Department		911	
REPORT OFF-BASE EMERGENCIES INVOLVING AIR FORCE ASSETS TO (fires, explosions, releases, or spills of hazardous waste off-base)			
# 1. Local Emergency Reporting Number		911	
# 2. Base Consolidated Command Post		555-3121	
FOR CHEMICAL EMERGENCY INFORMATION AND ASSISTANCE			
CHEMTREC		800-424-9300	
FOR FEDERAL, STATE, AND LOCAL RELEASE NOTIFICATION/REPORTING			
National Response Center		800-424-8802	
State Emergency Response Commission		555-733-3867	
State Release Reporting Number		800-555-7956	
Local Emergency Response Commission		555-1172	
FOR AIR FORCE RELEASE REPORTING TO MAJCOM			
Command Post		Autovon 555-2224	
Environmental Staff Office		Autovon 555-1234	
FOR ON-BASE ASSISTANCE AND INFORMATION			
Environmental Manager	3007	Bioenvironmental Engineer	3229
Civil Engineer Service Call	3009	Emergency Medical Services	3231
Ground Safety	3789	Security Police	3911
Public Affairs	3204	Contracting Officer	3798
Staff Judge Advocate	3445		
FOR OFF-BASE ASSISTANCE AND INFORMATION			
EPA RCRA/Superfund Hotline		800-424-9346	
EPA Hazardous Waste Ombudsman Program		800-262-7937	
EPA Emergency Planning & Community			
Right-to-Know Information Hotline		800-677-9424	
EPA Region 4		404-347-3016	
State Hazardous Waste Regulatory Authority		555-555-4321	

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TABLE OF CONTENTS

	Paragraph	Page
Chapter 1 - Introduction		
Section A--Background		
Objective.....	1.1	000
Effective Dates.....	1.2	000
Implementation.....	1.3	000
Section B--Scope of the Hazardous Waste Management Program		
Applicability to AAFB.....	1.4	000
Applicability of State Requirements	1.5	000
Chapter 2 – Responsibilities		
Section A--Tasked Organizations		
Overview.....	2.1	000
Section B--Specific Responsibilities		
Wing Commander (EPC Chairperson).....	2.2	000
Civil Engineer	2.3	000
Environmental Manager	2.4	000
Transportation Squadron Commander	2.5	000
Bioenvironmental Engineer	2.6	000
Public Affairs Officer.....	2.7	000
Commanders of Generating Activities.....	2.8	000
Hazardous Waste Accumulation Site Managers.....	2.9	000
DRMO.....	2.10	000
Explosive Ordnance Disposal.....	2.11	000
Ground Safety Officer	2.12	000
Section C--Organization Chart		
Chapter 3 - AAFB Hazardous Waste Stream Inventory and Locations		
Section A--Hazardous Waste Locations		
Hazardous Waste Accumulation Map.....	3.1	000
Hazardous Waste Accumulation Areas.....	3.2	000
Section B--Hazardous Waste Stream Inventory		
Responsibilities.....	3.3	000
AAFB Hazardous Waste Stream Inventory.....	3.4	000
Chapter 4 - Andrews Air Force Base Waste Analysis Plan		
Background Information	4.1	000
Hazardous Waste Characterization Process	4.2	000
Test Methods Used.....	4.3	000
Analytical Methods.....	4.4	000
Hazardous Waste Sampling Methods	4.5	000
Sampling Analysis Location and Frequency.....	4.6	000
Sample Documentation	4.7	000
Sample Request Procedures.....	4.8	000
Hazardous Waste Profile Sheet.....	4.9	000
Waste Analysis Plan Revision	4.10	000
Chapter 5 - Andrews Air Force Base Hazardous Waste Management Procedures		
Specific Waste Management Procedures	5.1	000
Permitted Hazardous Waste Storage Facility	5.2	000
Accumulation Site Management.....	5.3	000

	Paragraph	Page
Initial Accumulation Points.....	5.4	000
Hazardous Waste Turn-in to DRMO	5.5	000
On-Installation Transportation.....	5.6	000
Record Keeping	5.7	000
Reporting.....	5.8	000
Chapter 6 – Training		
Section A--Hazardous Waste Training Requirements		
Personnel for Which Training is Mandatory	6.1	000
Training Frequency.....	6.2	000
Section B--Training Scope		
Training Components	6.3	000
Air Force Hazardous Waste Management Training Program.....	6.4	000
Required Records.....	6.5	000
Chapter 7 – Response to Emergencies		
Emergency Response Procedures and Contingency Plan Requirements	7.1	000
Implementation.....	7.2	000
Chapter 8--Pollution Prevention		
Pollution Prevention Program Plan	8.1	000
Scope of the P3P	8.2	000
Tables		
3.1. AAFB Hazardous Wastes Accumulated at Initial Accumulation Points		000
3.2. AAFB Hazardous Wastes Accumulated at Accumulation Sites.....		000
4.1. Waste Analysis Parameters for AAFB Hazardous Waste Streams.....		000
4.2. Maximum Concentration of Contaminants for the Toxicity Characteristic		000
4.3. Table of Analytical Methods and SW-846 Numbers		000
4.4. Representative Sampling Method Protocols.....		000
5.1. Common Federal Stock Classes		000
5.2. RCRA Records and Corresponding Minimum Retention Periods		000
Figures		
2.1. AAFB Hazardous Waste Management Information Flow		000
3.1. Base Map Showing Hazardous Waste Accumulation and Storage Areas.....		000
3.2. AAFB Hazardous Waste Stream Inventory.....		000
4.1. Hazardous Waste Profile Sheet for AAFB Waste Stream AB-001.....		000
5.1. EPA Hazardous Waste Mark.....		000
5.2. Accumulation Site Container Log		000
5.3. Sample AF Form 2005, Issue/Turn-In Request.....		000
5.4. Sample DD Form 1348-1 Disposal Turn-in Document.....		000

Chapter 1

INTRODUCTION

Section A--Background

1.1. Objective. The United States Air Force is committed to proper management of the hazardous wastes that are generated on its installations. The primary objective of this document is to provide a management plan that gives personnel involved with hazardous waste the essential tools for effective management.

1.2. Effective Dates. On May 19, 1980, the U.S. Environmental Protection Agency (EPA) published the hazardous waste management system rules. Subtitle C of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, directed the EPA to promulgate these rules and regulations to protect human health and the environment from the improper management of hazardous waste. The effective date of these far-reaching regulations was November 19, 1980. RCRA was again amended in 1984. The amendments require increased management of hazardous waste by all organizations on Andrews Air Force Base (AAFB). Because the State has developed a program to implement the RCRA requirements, the EPA has delegated RCRA implementation to the State. The Federal Facility Compliance Act (FFCA) of 1992 requires all DoD facilities to comply with all applicable Federal, state, interstate, and local environmental regulations in the same manner as private facilities. The FFCA allows Federal and state agencies to assess fines against DoD facilities with RCRA violations. The procedures of this plan will be used to comply with Federal and state legislation and regulations. Plan revisions shall reflect changes in either level of hazardous waste management laws and regulations. Each revision to this plan will become effective immediately upon distribution unless otherwise noted herein.

1.3. Implementation. Implementation of the comprehensive hazardous waste management program mandated by RCRA requires maximum cooperation of all activities on AAFB. It is the responsibility of the installation commander to ensure compliance with all RCRA requirements for AAFB and to notify, apply for permits, and report to EPA or the State, as required, for all installation activities, including tenant activities. The individual base operational units (generating activities) are accountable for conducting their activities in accordance with this plan. Those base units, including supporting Defense Reutilization and Marketing Service activities and tenant activities, will provide necessary documentation to the installation commander through the Environmental Protection Committee for permit application, provide the reports required by EPA or the State, and ensure compliance with RCRA regulations and permit requirements at the facility.

Section B--Scope of the Hazardous Waste Management Program

1.4. Applicability to AAFB. This plan deals with key points in implementing the complex area of hazardous waste management required by RCRA as enforced by the EPA at Federal facilities such as AAFB. Federal facilities are not exempt from most of the requirements of this law. The plan covers the control and management of hazardous wastes at the point where they are generated from hazardous materials to the point of ultimate disposal. This plan implements the EPA's philosophy of "cradle-to-grave" management and control of hazardous waste.

1.5. Applicability of State Requirements. This plan also addresses mandatory requirements of the state of State Hazardous Waste Management regulations. AAFB is not exempt from state regulations which have been authorized by EPA to implement RCRA requirements in this state.

Chapter 2

RESPONSIBILITIES

Section A--Tasked Organizations.

2.1. Overview. Responsibilities for implementing this plan are distributed throughout base organizations that generate, accumulate, store, transport, turn-in, monitor, treat, dispose of, or respond to incidents involving hazardous waste. Compliance with Federal, State, and local hazardous waste laws and regulations is the responsibility of the installation commander through the Environmental Protection Committee (EPC). The development, maintenance, and implementation of this plan is the result of Andrews AFB Environmental Protection Committee action. The following organizations are tasked under this plan: Tactical Training Wing (EPC Chairperson); Civil Engineer Squadron; Supply Squadron; Transportation Squadron; Training Group; Medical Group; Aircraft Generation Squadron; Component Repair Squadron; Equipment Maintenance Squadron; Tactical Air Control Wing; Tactical Air Support Squadron; Defense Reutilization and Marketing Office (DRMO); Det. 1, Fighter Interceptor Group; Aerospace Maintenance and Regeneration Center; Electronic Combat Squadron; Bulk Fuel Company; Engineering Support Branch, USMCR; and Contracting.

Section B--Specific Responsibilities

2.2. Tactical Training Wing (EPC Chairperson).

- 2.2.1. Ensures that management of hazardous waste on AAFB complies with applicable portions of 40 CFR Parts 260-271 and State Hazardous Waste Management Regulations
- 2.2.2. Ensures the hazardous waste management plan is updated at least annually.
- 2.2.3. Signs installation hazardous waste permit applications.
- 2.2.4. Ensures all hazardous waste manifests are signed.
- 2.2.5. Ensures all personnel involved with hazardous waste have the required training and receive refresher training.
- 2.2.6. Ensures all enforcement actions are resolved quickly.

2.3. CES/CE.

- 2.3.1. In conjunction with DRMO, operates and maintains the hazardous waste storage facility.
- 2.3.2. Provides emergency notification through the emergency reporting number maintained by the Fire Protection Flight.
- 2.3.3. Reviews and signs the hazardous waste management plan record of annual review.
- 2.3.4. Ensures the hazardous waste management training is provided annually.
- 2.3.5. Equips the installation hazardous materials (HAZMAT) response team.

2.4. CSG/CEV (Environmental Manager).

- 2.4.1. Manages the base hazardous waste program.
- 2.4.2. Updates the hazardous waste management plan.
- 2.4.3. Conducts or coordinates hazardous waste management training for all base personnel who handle or who may be otherwise involved in the management of hazardous waste. Maintains training documentation for a minimum of 3 years.
- 2.4.4. Signs hazardous waste manifests and prepare hazardous waste reports and compliance documentation as required by EPA, state regulatory agency, and Air Force instructions.
- 2.4.5. Performs hazardous waste management compliance surveys of AAFB.
- 2.4.6. Maintains records of hazardous waste management surveys of AAFB.
- 2.4.7. Prepares and submits annual reports to the EPA and State Hazardous Waste Enforcement Authority.
- 2.4.8. Coordinates with Federal, State, county, and city authorities on hazardous waste management procedures.
- 2.4.9. Develops and coordinates compliance with a Closure/Post-Closure Plan for the hazardous waste storage facility.
- 2.4.10. Develops a AAFB Closure/Post-Closure Plan that addresses each hazardous waste accumulation site.
- 2.4.11. Prepares permit applications as required. Coordinates permit applications with TTW/CC.
- 2.4.12. Provides Public Affairs Office with a fact sheet on the base hazardous waste management program. The fact sheet will contain an overview of RCRA and State requirements, the number and location of permitted storage and treatment facilities and accumulation sites, inventory of hazardous waste, key base hazardous waste management plan organizations, and an explanation of the waste disposal and recycling process. The fact sheet will be updated as required.
- 2.4.13. Maintains a written operating record. The following information will be recorded as it becomes available and will be perpetually maintained until the event of base or facility closure:

- Facility layout plan.
- Location of each hazardous waste initial accumulation point (IAP) within each generating activity's facility and the quantity at each IAP.
- Records and results of waste analysis and trial tests.
- Summary reports and details of all incidents that require implementing the hazardous waste contingency portion of the installation's HAZMAT plan.
- Records and results of inspections.

2.4.14. Provides all applicable records to authorized representatives of the EPA or State regulatory agency.

2.4.15. Maintains routine liaison with HQ MAJCOM, EPA, and State regulatory agency in regard to hazardous waste inspections, rule interpretation, and problem resolution.

2.4.16. Assists waste generating activities in hazardous waste characterization (identification, description, and quantification), accumulation, storage, marking and labeling, waste minimization, waste recycling, waste turn-in, and disposal.

2.4.17. Ensures all hazardous waste is accurately weighed for disposal actions.

2.4.18. Acts as alternate emergency coordinator.

2.4.19. Ensures funding requirements are identified and allocates funds based upon regulatory requirements.

2.5. Transportation Squadron.

2.5.1. Provides safe transportation of hazardous waste from hazardous waste accumulation sites to the on-base permitted hazardous waste storage facility as a service to base hazardous waste generating activities which do not have adequate equipment to safely transport waste on-base on their own.

2.5.2. Only transports hazardous waste on-base if it is in approved containers deemed to be in good condition.

2.5.3. Provides guidance to base organizations on approved containers for accumulating and shipping hazardous waste.

2.5.4. Provides transportation of hazardous wastes generated during emergency contingency conditions.

2.5.5. Ensures that hazardous waste cargo is adequately secured and safe for transport before moving.

2.6. Medical Group/SGPB (Bioenvironmental Engineering Services).

2.6.1. Collects (or assist in collection of) samples for hazardous waste determination and forwards to USAF Armstrong Laboratory or a local contract laboratory for analysis in accordance with the sampling and analytical requirements specified in EPA Publication SW-846 and the AAFB Waste Analysis Plan.

2.6.2. Forwards analytical results to appropriate generating activity and Environmental Manager.

2.6.3. Interprets analytical results and assists base generating activities and the environmental management function in preparing DRMS Form 1930, *Hazardous Waste Profile Sheet*.

2.6.4. Monitors ground water and surface water outfalls for contamination.

2.6.5. Receives and reviews Materials Safety Data Sheets (MSDSs) or DoD Hazardous Materials Information System (HMIS) for all current and new hazardous materials sheets on the installation.

2.6.6. Informs LGS of any special actions or assignment of Issue Exception Codes (IEX) based on the review of MSDSs or HMIS.

2.6.7. Specifies personal protective equipment to be worn by personnel occupationally exposed to or who may otherwise manage hazardous waste.

2.6.8. Participates in hazardous waste training programs and exercises.

2.6.9. Coordinates with accumulation site managers, Environmental Manager, Fire Protection Flight, and Ground Safety on location of hazardous waste initial accumulation points and accumulation sites.

2.6.10. Develops and updates the installation's Waste Steam Inventory and Waste Analysis Plan.

2.7. Public Affairs Office (PAO).

2.7.1. Acts as the focal point for inquiries from the news media and concerned citizens regarding hazardous waste and in the event of a hazardous waste incident or accident.

2.7.2. Assists the On-Scene Commander during situations involving hazardous waste incidents by keeping interested news media and the public aware of events and curtailing rumors through the dissemination of coordinated, accurate information. Responds to the accident/incident site, to the Command Post, and to the Public Affairs duty section where an information center may be established.

2.7.2.1. The presence of hazardous waste in a contained area will probably not constitute reasonable cause to forcibly deny access to the area by accredited news media representatives. Applicable security and safety provisions will apply, however.

Under no circumstances will Public Affairs Office personnel escort news media representatives into a hazardous or potentially dangerous area without permission from the On-Scene Commander.

2.8. Commanders of Generating Activities.

- 2.8.1. Submits requests to CSG/CEV and Medical Group/SGPB, in turn, to ensure that all wastes are evaluated and that hazardous wastes are properly classified.
- 2.8.2. Provides safe equipment and locations for initial accumulation points and accumulation sites. Coordinate each location with Environmental Manager, Ground Safety, Fire Protection Flight, and Bioenvironmental Engineering Services.
- 2.8.3. Ensures that the management of hazardous waste initial accumulation points and accumulation sites complies with Federal and State hazardous waste management regulations.
- 2.8.4. Appoints the shop supervisor of shops that generate hazardous waste as the hazardous waste accumulation site manager. The accumulation site manager retains overall responsibility for the management of the accumulation site. For military supervisors, management duties may be delegated by the shop supervisor, but to no lower than an E-5 (Staff Sergeant). Waivers to this requirement may be submitted to CEV if hazardous waste generating shops cannot comply because of personnel and/or rank limitations.
- 2.8.5. Allows appropriate facilities, shops, and equipment to be inspected for hazardous waste management regulatory compliance by installation fire, safety and health personnel, CEV personnel, ECAMP team members, and authorized State or Federal inspectors.
- 2.8.6. Ensures all personnel that handle hazardous waste or who are otherwise involved in hazardous waste management receive annual and refresher training.
- 2.8.7. Ensures each generating activity properly completes all required documentation (hazardous waste profile sheet, AF Form 2005, DD Form 1348-1, and hazardous waste manifest for transport along public highways).
- 2.8.8. Maintains a hazardous waste file for each hazardous waste stream within the generating activity (hazardous waste profile sheets, AF Form 2005s, DD Form 1348-1s, waste analysis results, and hazardous waste manifests).

2.9. Hazardous Waste Accumulation Site Managers.

- 2.9.1. Assumes overall responsibility for management of the hazardous waste accumulation site and initial accumulation points serviced by the site.
- 2.9.2. Coordinates with Environmental Manager, Fire Protection Flight, Bioenvironmental Engineering Services, and Ground Safety on relocation of initial accumulation points and accumulation sites.
- 2.9.3. Ensures initial accumulation points and accumulation site has appropriate warning signs.
- 2.9.4. Ensures that the accumulation site has an release response kit.
- 2.9.5. Ensures that an approved fire extinguisher is readily available if flammable hazardous waste is handled at an initial accumulation points or stored in the accumulation site.
- 2.9.6. Performs and documents inspections of the accumulation site. Inspections must be performed weekly for containers and daily for tanks.
- 2.9.7. Ensures that hazardous wastes are collected and stored in approved containers. Coordinate with CEV and Transportation Officer regarding container selection.
- 2.9.8. Ensures that hazardous wastes are in appropriate (authorized) containers capable of being loaded and transported. A representative of the generating activity must accompany the vehicle operator to DRMO.
- 2.9.9. Maintains hazardous waste containers in proper condition, e.g., no pitting, no sharp edge creases or dents, no material defects, no bulging heads.
- 2.9.10. Ensures that containers are kept closed except when they are being filled.
- 2.9.11. Ensure that all hazardous waste is placed in an approved accumulation site.
- 2.9.12. Ensures that hazardous waste is not placed in a container that is not properly marked. There must never be a doubt about the contents of a container holding hazardous waste.
- 2.9.13. Ensures that hazardous waste containers are properly painted/marked before they receive any hazardous waste.
- 2.9.13.1. Marks the following information on the hazardous waste label or container:
 - the words "HAZARDOUS WASTE";
 - proper shipping name (and technical name);
 - national stock number;
 - contaminants and estimated percentages of each;
 - accumulation start date (the date that the first amount of hazardous waste was placed into the container at accumulation sites; or when the volume limit was met at initial accumulation points); and
 - the AAFB assigned container number.

2.9.14. Ensures that the placement of a new hazardous waste container in its accumulation site is accompanied by a simultaneous entry of the placement in the inspection log. Continue updating the log entry for all containers until they are turned into DRMO. Under no circumstances shall a hazardous waste container be placed in any accumulation site without there being a proper entry in the weekly inspection log.

2.9.15. Ensures that the storage of hazardous waste in the accumulation site does not exceed 90 days.

2.9.16. Provides initial hazardous waste management training to personnel who handle hazardous waste. Coordinates training with CEV.

2.9.17. Documents the training and submits a copy of the documentation to CEV. The documentation must include the following:

- job title for each position relating to hazardous waste and name of employee filling each job;
- a written description for each position (must include the required skill, education, or other qualifications and duties of personnel assigned to each position);
- a written description of type and amount of introductory and continuing training; and
- documentation that hazardous waste management training has been given to and completed by appropriate personnel.

2.9.18. Provides annual hazardous waste management refresher training to all personnel who handle hazardous waste. Documents the training and submits a copy of the documentation to CEV.

2.9.19. Properly annotates the AF Form 2005 and DD Form 1348 prior to processing the hazardous waste through Base Supply, CEV and DRMO. Completes and updates the DRMS Form 1930, *Hazardous Waste Profile Sheet* prior to waste turn-in.

2.9.20. Implements emergency response. When a hazardous waste spill is detected, stop all other actions and contain spill to best of ability based on unit capability, resources, and the procedures described in the HAZMAT Plan. Activate the installation's response process by calling the installation's emergency reporting number.

2.9.21. Maintains all hazardous waste documentation and correspondence for a minimum of 5 years.

2.10. DRMO.

2.10.1. Receives from generating activities hazardous property and waste except explosive ordnance.

2.10.2. Disposes of hazardous property by reutilization, resale or service contract.

2.10.3. Provides guidance on turn-in procedures to base personnel.

2.10.4. Maintains all hazardous waste documentation and correspondence for a minimum of 5 years.

2.10.5. Conducts and documents hazardous waste management training for all DRMO personnel.

2.10.6. Forwards a copy of the hazardous waste management training records to CSG/CEV.

2.10.7. Develops and follows a written schedule for inspecting the permitted storage facility.

2.10.8. Conducts and documents weekly inspections (daily if loading or unloading hazardous waste) at the permitted storage facility. Takes remedial action as required.

2.10.9. Submits required copies of hazardous waste manifests to applicable agencies as required.

2.10.10. Takes precautions to prevent accidental ignition or reaction of ignitable or reactive waste.

2.10.11. Maintains required aisle space.

2.10.12. Keeps an operating record of the facility as required by 40 CFR § 264.73 and § 264.74.

2.10.13. Ensures that containers holding ignitable or reactive waste are located at least 50 feet inside the facility property line.

2.10.14. Inspects and, if necessary, has Environmental Manager analyze each hazardous waste before accepting it for storage.

2.10.15. Verifies accuracy of hazardous waste weight measurements prior to waste acceptance.

2.11. EMS/EOD:

2.11.1. Develops and follows a written inspection schedule.

2.11.2. Inspects the EOD range before and after each EOD operation in accordance with the inspection schedule.

2.11.3. Conducts and documents hazardous waste management training for all EOD personnel. Provides copies of training documentation to CEV.

2.11.4. Ensures that all munitions items that are classified as hazardous waste received from off-base are accompanied by the required hazardous waste manifest.

- Signs and dates each copy of the manifest.
- Notes all discrepancies in the manifest.
- Immediately gives one copy of the manifest to the transporter.
- Immediately sends one copy of the manifest to the generating activity.

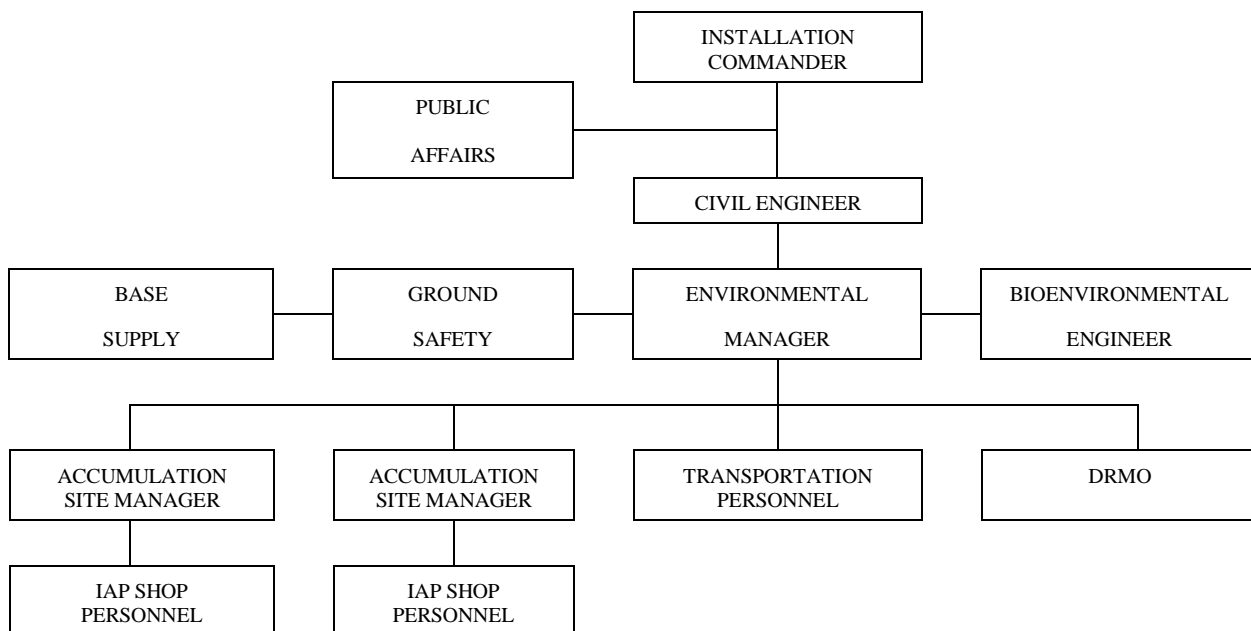
- Send two copies of the manifest to CEV within 30 days.
- 2.11.5. Maintains a written operating record as required by 40 CFR § 264.73 and § 264.74.
- 2.11.6. Maintains a log of explosives that are destroyed by explosive class, net explosive weight, and origin. Forwards a copy to CEV annually by 1 Feb.
- 2.11.7. Ensures that all munitions items are accountable from receipt to destruction.
- 2.11.8. Maintains all hazardous waste documentation for a minimum period of five years because all hazardous waste is now covered by the land disposal restrictions.

2.12. TTW/SEG. Inspect hazardous waste accumulation sites during the regular annual ground safety inspection. All safety items will be inspected and made part of the formal inspection report.

Section C--Organization Chart.

Figure 2.1 graphically describes the correct direction that information regarding hazardous waste management should flow.

Figure 2.1. AAFB Hazardous Waste Management Information Flow.



Chapter 3

ANDREWS AIR FORCE BASE HAZARDOUS WASTE STREAM INVENTORY AND LOCATIONS

Section A--Hazardous Waste Locations

3.1. Hazardous Waste Accumulation Map. The map on page 117 shows areas and buildings at AAFB where hazardous wastes are initially accumulated (initial accumulation points), accumulated by the generating activities for up to 90 days from the time the first volume of hazardous waste is placed in a container or moved into the areas by the generating activities (accumulation sites), and the building where hazardous waste may be stored for longer periods of time prior to disposal (permitted storage).

3.2. Hazardous Waste Accumulation Areas.

3.2.1. An initial accumulation point is an area where waste is initially accumulated under control of the shop supervisor of the process generating the waste. The maximum volume of hazardous waste permitted at each initial accumulation point is 55 gallons or one quart of acute hazardous waste on the P-list. Once one of these limits is exceeded, the waste must be moved to its designated waste accumulation site. There are four initial accumulation points for hazardous waste at Andrews Air Force Base. The areas designated as initial accumulation points are identified below in Table 3.1. If an additional initial accumulation point is needed, a location near the area where the waste is generated will be selected by the area accumulation site manager who will notify the Environmental Manager.

Table 3.1. AAFB Hazardous Waste Initial Accumulation Points.				
Building	Organization	Waste Stream #	Manager	Phone Number
207	AMARC Paint Shop	PO-001	Mr. Smith	3521
207	AMARC Paint Shop	PO-002	Mr. Jones	3529
213	ECS-AGE	AC-001	TSgt. Blue	3988
213	ECS-AGE	FC-001	TSgt. Ross	3968

3.2.2. A hazardous waste accumulation site is an area near the waste generating activity where hazardous waste is accumulated in containers or tanks for a period of up to 90 days. AAFB only accumulates hazardous waste in containers. There are three accumulation sites for hazardous waste at AAFB. The areas designated for the accumulation of hazardous waste are identified below in Table 3.2. If an additional accumulation site is needed, a location near the area where the waste is generated will be selected by the area accumulation site manager in coordination with the Environmental Manager who will ensure that the area selected and the design of the accumulation site minimizes the threat of the waste to human health or the environment.

Table 3.2. AAFB Hazardous Wastes Accumulation Sites.				
Building	Organization	Waste Stream #	Manager	Phone Number
207	AMARC Paint Shop	PO-001 PO-002	Mr. Adams	3523
213	ECS-AGE	AC-001 FC-001	TSgt. Alcot	3973
214	CES Protect Coat Shop	AB-001	Mr. Andrews	3620

3.2.3. A permitted storage facility is an area in which a facility has been granted a permit to store hazardous waste in accordance with permit STATED1234567890. DRMO operates the hazardous waste storage facility in Building 198. The permit should be referred to for specific operating procedures and restrictions. Wastes restricted from land disposal may be stored at this facility for up to one year. It is the policy of AAFB to ship hazardous waste off-site as expeditiously as possible.

Section B--Hazardous Waste Stream Inventory

3.3. Responsibilities.

3.3.1. Andrews Air Force Base maintains a hazardous waste stream inventory for every hazardous waste stream generated on base. Bioenvironmental Engineering Services (BES) is the office of primary responsibility for the AAFB hazardous waste stream inventory. AAFB will not handle, store, transport, dispose of or inventory non-DOD owned hazardous wastes or materials except as authorized.

3.3.2. AAFB will ensure that all wastes are properly characterized and classified as either hazardous or non-hazardous wastes in accordance with the AAFB Waste Analysis Plan (See Chapter 4). Hazardous wastes will be characterized on the DRMS Form 1930, *Hazardous Waste Profile Sheet*. Information from the hazardous waste profile sheet will be used by Bioenvironmental Engineering Services to maintain and update the hazardous waste stream inventory. The accumulation site manager is responsible for quantifying all hazardous waste streams for the hazardous waste stream inventory.

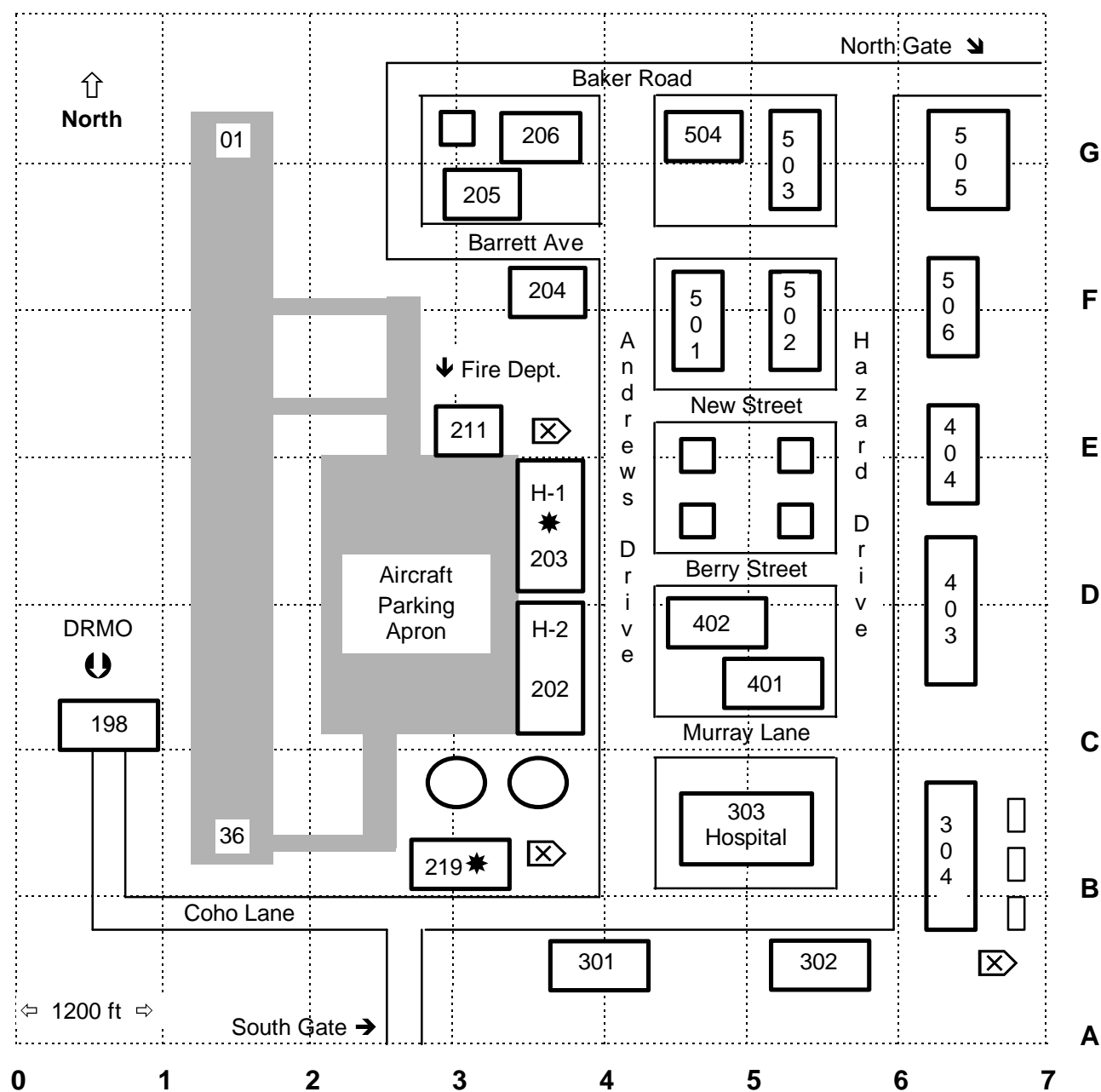
3.3.3. Hazardous waste generating activities will identify and separately document wastes which are classified as non-hazardous due to the following:

- subject to solid or hazardous waste exclusions (40 CFR § 261.4);
- recycled, not subject to the generator waste determination requirements of 40 CFR § 262.11 (e.g., lead acid batteries that are being reclaimed, used oil that is burned for energy recovery, and scrap metal which is recycled) (40 CFR § 261.6);
- land disposal restricted waste that is excluded from the definition of hazardous or solid waste or exempt from Subtitle C regulations under 40 CFR 261.2-261.6 subsequent to the point of generation, to document the waste, its exclusion or exemption, and the disposition of the waste.

3.3.4. The hazardous waste generating activity of an area generating an excluded, exempt, or recycled waste will place a one-time notice stating such generation, the subsequent exclusion from the definition of solid or hazardous waste or exemption from Subtitle C regulation, and the disposition of the waste in the generating activity's waste management file. A copy of the document will be forwarded to the Environmental Manager and maintained on-site for at least five years from the date the waste was last sent to on-site or off-site treatment, storage, or disposal.

3.4. Andrews Air Force Base Hazardous Waste Stream Inventory. Figure 3.2 shows the hazardous waste stream inventory for the five hazardous waste streams generated by AAFB.

Figure 3.1. Base Map Showing Hazardous Waste Accumulation and Storage Areas.



★ Initial Accumulation Point (IAP) ☒ Accumulation Site (AS) Ⓢ Permitted Facility

Figure 3.2 Hazardous Waste Stream Inventory.

HAZARDOUS WASTE STREAM INVENTORY							
Date: 6 Jun 94		Contact Name/Preparer: Andrews			Telephone Number: 3620		
		Installation: Andrews Air Force Base			Organization Code: CES		
Waste Stream Location (Shop/Bldg)	Waste Stream Number	Estimated Quantity Disposed	Hazardous Waste Criteria Exhibited & Concentration Limits	EPA/State Hazardous Waste ID Number	EPA Priority Pollutant Number	Disposal Container	Disposal Method
Protective Coating Shop Grid: D-6 Bldg: 207	AB-001 Waste Abrasive Blasting Media with Paint Chips	20,000 lb/yr	T-Chromium (125 mg/l) (SW-6010) T-Lead (360 mg/l) (SW-6010)	D007, D008	5, 8	Drum	DRMO
Date: 6 Jun 94		Contact Name/Preparer: : Adams/Smith			Telephone Number: 3525		
		Installation: Andrews Air Force Base			Organization Code: EMS		
Waste Stream Location (Shop/Bldg)	Waste Stream Number	Estimated Quantity Disposed	Hazardous Waste Criteria Exhibited & Concentration Limits	EPA/State Hazardous Waste ID Number	EPA Priority Pollutant Number	Disposal Container	Disposal Method
AMARC Grid: B-5 Bldg: 207	PO-001 Waste Paints & Thinners	4,800 lb/yr	I-Flashpoint 120 F (SW-1010) F-Xylene (1-11%)	D001, F003	17	Drum	DRMO
AMARC Grid: B-5 Bldg: 207	PO-002 Spent PD 680 Type I Still Bottom	7,000 lb/yr	I-Flashpoint 95 F (SW-1010) T-Chromium (150 mg/l) (SW-6010)	D001, D007	5	Drum	REC DRMO (100 lbs still bottoms per month disposed via DRMO)

Figure 3.2 Continued.

HAZARDOUS WASTE STREAM INVENTORY							
Date: 6 Jun 94		Contact Name/Preparer: TSgt Alcot			Telephone Number: 3973		
		Installation: Andrews Air Force Base			Organization Code: ECS		
Waste Stream Location (Shop/Bldg)	Waste Stream Number	Estimated Quantity Disposed	Hazardous Waste Criteria Exhibited & Concentration Limits	EPA/State Hazardous Waste ID Number	EPA Priority Pollutant Number	Disposal Container	Disposal Method
AGE Grid: E-5 Bldg: 213	AC-001 Solvent Contaminated Rags	1,000 lb/yr	F-Cotton Rags (80-90%) F-1,1,1-Trichloroethane (5-10%) T-Benzene (5860 mg/l) (SW-8240)	F001, D018	1, 15	Drum	DRMO
AGE Grid: E-5 Bldg: 213	FC-001 Contaminated Aircraft Fuel	20,000 lb/yr	I-Flashpoint 12°F (SW-1010) T-Benzene (5860 mg/l) (SW-8240)	D001, D018	1	Drum	DRMO

Chapter 4

ANDREWS AIR FORCE BASE WASTE ANALYSIS PLAN

4.1. Background Information.

4.1.1. **Federal and State Requirements.** This is the waste analysis plan for Andrews Air Force Base as required by 40 CFR § 264.13(a), (b), and (c), 40 CFR § 268.7, 40 CFR § 270.14(b)(5), State Regulations, and Air Force Policy. The waste analysis plan applies to all AAFB hazardous waste streams that are transferred to the DRMO-operated permitted storage area (building 198).

4.1.2. **Andrews Air Force Base Plan Contents.** To comply with Federal and State RCRA requirements, this plan contains base procedures for identifying and evaluating hazardous waste streams in order to complete a hazardous waste profile sheet on each hazardous waste stream. The waste analysis plan describes detailed procedures for obtaining physical and chemical analyses from all associated waste generating activities at AAFB including procedures for selecting waste parameters for analysis, selecting waste sampling methods, documenting samples, identifying analytical methods, selecting facilities for analyzing samples, and reevaluating hazardous waste streams.

4.1.3. **Waste Stream Inventory.** The AAFB hazardous waste stream inventory lists all hazardous waste streams transferred to Building 198 and other hazardous waste streams where storage in excess of 90 days is not permitted. The hazardous waste process codes used in the hazardous waste stream inventory can be cross-referenced to the waste analysis plan procedures to identify the sampling and analytical procedures which apply to specific hazardous waste streams generated at AAFB.

4.2. Hazardous Waste Characterization Process.

4.2.1. Hazardous waste characterization will involve three sequential steps: 1) waste identification, 2) waste description, 3) waste quantification.

4.2.1.1. Waste Identification.

4.2.1.1.1. Waste identification is a process in which all newly generated wastes at AAFB are evaluated to determine whether the waste is hazardous or non-hazardous. Waste identification also involves classifying hazardous wastes. This process can be conducted either by using the waste generator's knowledge of the waste or by analytical testing. In either case, all evaluations must be based on the EPA solid waste and hazardous waste definitions. Analytical testing is required at Andrews Air Force Base for all waste streams which are chemical mixtures. Testing is not normally required for waste, unused, commercial chemical products or laboratory chemicals in their original, marked containers.

4.2.1.1.2. Bioenvironmental Engineering Services will determine if the generator's knowledge of the waste is sufficient to characterize the waste. The generating activity should request a hazardous waste determination through the Environmental Manager to Bioenvironmental Engineering Services. If testing is needed, Bioenvironmental Engineering Services will arrange for sample and analysis. Sampling and analysis must be conducted in accordance with the requirements specified in EPA publication SW-864 and this waste analysis plan. All sampling and analysis costs will be funded from the installation operations and maintenance funds.

4.2.1.1.3. The waste generating activity should ask the following questions to determine if they have a hazardous waste stream which requires further evaluation:

4.2.1.1.3.1. **Is it a waste?** If the answer to any of the following four questions is yes, the material is a waste.

- Is the material no longer useful for its intended purpose because it is dirty, out of specification, or a spill residue?
- Is it an unintended or unusable byproduct?
- Does the base intend to discard the material for eventual treatment, storage, recycling, or disposal?
- Is it produced by cleanup at a previously uncontrolled waste site?

4.2.1.1.3.2. **Is it a solid waste?** A solid waste is generally defined as any discarded material (including solids, liquids, and containerized gases) which is abandoned, recycled, or considered inherently waste-like.

4.2.1.1.3.3. **Is it a hazardous waste?** If the material is a solid waste, the solid waste must be evaluated to determine if it is a hazardous waste. A material is a hazardous waste if it has not been excluded from regulation and is a characteristic hazardous waste (e.g., ignitable, corrosive, reactive, or toxic), a listed hazardous waste, or a mixture of a listed hazardous waste and solid waste. This evaluation can be conducted by either using the waste generator's knowledge of the hazardous characteristics of the waste in light of the materials or processes used, or by analytical testing as described 40 CFR 261 and this waste analysis plan.

4.2.1.2. **Waste Description.** The analytical results must be interpreted to determine if tested waste streams are hazardous according to 40 CFR Part 261 or State definitions. Bioenvironmental Engineering Services is responsible for interpreting the analytical test results for the Environmental Manager. Bioenvironmental Engineering Services should mark the test results as "HAZARDOUS WASTE" or "NOT HAZARDOUS WASTE" after making a determination. The analytical

results as well as the generating activities waste process knowledge will be used to complete the hazardous waste profile sheet. The generating activity will obtain assistance in completing the hazardous waste profile sheet from the Environmental Manager, Bioenvironmental Engineering Services, and the Base Transportation Officer.

4.2.1.3. **Waste Quantification.** The final step is determining the amount of hazardous waste generated each year, which is documented in the hazardous waste inventory (see Chapter 3).

4.3. Test Methods Used.

4.3.1. **Waste Stream Screening.** Three industrial work centers at AAFB generate wastes; all waste is transferred to Building 198. All new waste streams must be evaluated by the generating activity as soon as they are generated and prior to leaving the waste generating area.

Table 4.1. Waste Analysis Parameters for AAFB Hazardous Waste Streams.		
Waste Stream Number	Waste Description	Parameters
PO-001	Waste paints and thinners	Flash point, TCLP (metals), BTU value, and ash content
PO-002	Still bottoms from PD-680 recycling	Flash point, TCLP (metals), and ash content
AC-001	Rags containing oil, 1,1,1-trichloroethane	TCLP (metal, volatiles, semi-volatiles) and 1,1,1-Trichloroethane
FC-001	Fuel contaminated with water, oil	Flash point, BTU value, and ash content
AB-001	Waste abrasive blasting media with paint	TCLP (metals)

4.3.2. Waste Parameter Selection.

4.3.2.1. Table 4.1 lists all of the existing wastes streams at AAFB by waste stream number and identifies the specific parameters that are analyzed for each waste stream. Analytical testing for the specified parameters must be repeated annually unless the waste generating process or the materials comprising the wastes change. If the waste generating process or waste characteristics change, the waste must be retested prior to disposal. The parameters selected for new waste streams will be based on the waste characterization information required in the waste disposal contract for the waste. As a minimum, new waste streams will be evaluated using the Toxicity Characteristic Leaching Procedure (TCLP) to determine toxicity characteristics unless the generator's knowledge of the waste is sufficient to rule out the presence of any of the toxicity characteristic contaminants.

4.3.2.2. The waste parameters selected above are based on the suspected hazardous waste characteristics of the waste.

- **Flash Point.** Flash point is determined through a test procedure which identifies whether a waste is ignitable (D001). Ignitable hazardous wastes have flash points less than 140°F. Hazardous waste streams PO-001, PO-002, and FC-001 contain varying concentrations of ignitable solvents which have the potential to lower the waste's flash point to less than 140°F. Because process knowledge is not adequate to accurately predict flash point, these waste must be retested each year by December 1 to determine flash point.
- **BTU Value and Ash Content.** The disposal contract through the DRMO for hazardous waste streams PO-001, PO-002, and FC-001 specifies that BTU value and ash content will be analyzed each year by December 1 to determine if these hazardous waste streams are suitable for fuel blending and use in an energy recovery program. To be accepted, these wastes must have a minimum heating value of 5000 BTU/lb and an ash content no higher than 5 percent.
- **TCLP Metals.** If an extract from a representative sample of waste, which when tested in accordance with the Toxicity Characteristic Leaching Procedure, contains any of the contaminants listed in Table 4.2 at a concentration equal to or greater than the regulatory level listed in the table, the waste is a hazardous waste. Toxicity characteristic constituents which are metals of concern include arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Hazardous waste streams PO-001, PO-002, and AB-001 have the potential to contain lead and chromium-based paint pigments and must be analyzed for the TCLP metals each year by December 1.

- **TCLP Metals, Volatiles and Semi-Volatiles.** Rags from aircraft cleaning operations have the potential to absorb toxicity characteristic contaminants such as lead and benzene. A TCLP analysis for all contaminants listed in Table 4.2 except pesticides will be completed on hazardous waste stream AC-001 each year by December 1.
- **1,1,1-Trichloroethane Concentration.** Spent 1,1,1-trichloroethane used for cleaning and degreasing is a listed hazardous waste (F001). If waste rags contain any detectable concentration of spent 1,1,1-trichloroethane, they also must be classified as an F001 waste. Waste rags soaked with this solvent will be analyzed annually to determine their 1,1,1-trichloroethane concentration and hazardous waste code(s).

4.3.2.3. All new and non-recurring hazardous waste streams, except for laboratory chemicals and unused commercial chemical products, must be tested in accordance with the TCLP to determine if they exhibit the toxicity characteristic, except when process knowledge is sufficient to certify that none of the TCLP contaminants could be present. In addition, the major components of each hazardous waste stream must be defined on the hazardous waste profile sheet. If process knowledge is insufficient, these wastes will be tested to determine their major components. A major component includes any hazardous constituent listed in Appendix VIII of 40 CFR Part 261 present over 10,000 ppm (1%). If process knowledge is insufficient to identify major components, then testing for those components in accordance with the procedures outlined in EPA's Publication SW-846 will be necessary. Additional testing (e.g., flash point, BTU value, ash content, pH, etc.) will be based on the testing requirements specified in the disposal contract for the waste.

4.3.2.4. AAFB waste oil and oil filters, which are recycled off-site by being burned for energy recovery, are not regulated as a hazardous waste if they contain less than 1000 ppm of total halogens. Each batch of waste oil and filters will be screened for total halogens (TOX) by submitting a representative sample of the waste oil to Bioenvironmental Engineering Services four weeks prior to pickup by the waste oil hauler. All waste oil is assumed to be off-specification used oil fuel at AAFB in accordance with EPA regulations in 40 CFR 266.40.

4.4. Analytical Methods.

4.4.1. Several of the parameters specified above will be analyzed using the test methods from EPA's "*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*" (EPA Publication SW-846). The SW-846 method numbers are specified in Table 4.3.

4.4.2. The hazardous waste analysis for all of the above waste streams will be conducted at the Armstrong Laboratory (AL). The AL is accredited by the American Association of Laboratory Accreditation and is approved by the Texas Water Commission for the analysis of wastewater, hazardous waste, Superfund site, underground injection, and underground storage tank program samples.

Table 4.2. Maximum Concentrations of Contaminants for the Toxicity Characteristic.

EPA Hazardous Waste Number	Contaminant	Regulatory Level (mg/l)
D004	Arsenic	5.0
D005	Barium	100.0
D018	Benzene	0.5
D006	Cadmium	1.0
D019	Carbon Tetrachloride	0.5
D020	Chlordane	0.03
D021	Chlorobenzene	100.0
D022	Chloroform	6.0
D007	Chromium	5.0
D023	o-Cresol	200.0 ²
D024	m-Cresol	200.0 ²
D025	p-Cresol	200.0 ²
D026	Cresol	200.0
D016	2,4-D	10.0
D027	1,4-Dichlorobenzene	7.5
D028	1,2-Dichloroethane	0.5
D029	1,1-Dichloroethylene	0.7
D030	2,4-Dinitrotoluene	0.13 ¹
D012	Endrin	0.02
D031	Heptachlor (and its hydroxide)	0.008
D032	Hexachlorobenzene	0.13 ¹
D033	Hexachlorobutadiene	0.5
D034	Hexachloroethane	3.0
D008	Lead	5.0
D013	Lindane	0.4
D009	Mercury	0.2
D014	Methoxychlor	10.0
D035	Methyl Ethyl Ketone	200.0
D036	Nitrobenzene	2.0
D037	Pentachlorophenol	100.0
D038	Pyridine	5.0 ¹
D010	Selenium	1.0
D011	Silver	5.0
D039	Tetrachloroethylene	0.7
D015	Toxaphene	0.5
D040	Trichloroethylene	0.5
D041	2,4,5-Trichlorophenol	400.0
D042	2,4,6-Trichlorophenol	2.0
D017	2,4,5-TP (Silvex)	1.0
D043	Vinyl Chloride	0.2

¹ Quantitation limit is greater than the regulatory level. The quantitation limit therefore becomes the regulatory level.

² If the o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.

Table 4.3. Table of Analytical Methods and SW-846 Numbers.

Key Methods	SW-846 Method Numbers
TCLP Metals	SW-6010, 7470 (Hg)
TCLP Volatiles	SW-8240
TCLP Semi-volatiles	SW-8270
Ignitability	SW-1010
Extraction	SW-1311
Extraction Preparation for Flame/ICP	SW-3010
Extraction Preparation for Furnace	SW-3020
Extraction Preparation for Oils/Grease	SW-3040
Extraction Preparation for Sludge	SW-3050
Total Organic Halides	SW-9020
Trichloroethane	SW-8010, 8240

4.5. Hazardous Waste Sampling Methods.

4.5.1. All waste samples will be collected in accordance with procedures specified in this waste analysis plan and the EPA-specified procedures identified in Table 4.4 to ensure that they are representative of the waste stream.

4.5.2. Both sampling equipment and sample bottles must be clean in order to prevent contamination of the sample. Sample bottles used for holding samples which will be analyzed for metallics should be cleaned with detergent, rinsed with tap water, rinsed with 1:1 nitric acid, rinsed with tap water, rinsed with 1:1 hydrochloric acid, rinsed with tap water, and finally rinsed with Type II deionized water. Sample bottles used for holding samples which will be analyzed for organic compounds should be washed with detergent, rinsed with tap water, rinsed with distilled, deionized water, and dried at 105° C for approximately one hour.

Table 4.4. Representative Sampling Method Protocols.

Sample Type	Sampling Method
Extremely viscous liquids	ASTM Standard D140-70
Crushed or powdered material	ASTM Standard D346-75
Soil or rock-like material	ASTM Standard D420-69
Soil-like material	ASTM D1452-65
Fly ash-like material	ASTM Standard D2234-76
Containerized Liquid Wastes	US EPA SW-846 COLIWASA Procedure
Liquid wastes in pits, ponds, lagoons and similar reservoirs	US EPA SW-846 Pond Sampler

4.5.3. Samples which are to be analyzed for volatiles must be placed in a cooler for storage and shipping to ensure that they are cooled down to 4°C.

4.5.4. Sampling equipment (e.g., the COLIWASA) must be decontaminated before being reused by washing in a detergent solution and rinsing. Alternatively, disposable COLIWASAs will be used and disposed of after each sample is collected.

4.5.5. Personnel collecting hazardous waste samples must wear personal protective equipment including impervious gloves, chemical safety goggles, coveralls, and suitable boots when sampling hazardous waste. Bioenvironmental Engineering Services should be contacted to determine the proper equipment to be worn when sampling specific waste streams. A minimum of Level B protection (e.g., chemical splash suit, impervious gloves, impervious outer boots, and a positive pressure self-contained breathing apparatus) must be worn when sampling unknown wastes streams.

4.6. Sample Analysis Location and Frequency.

4.6.1. **Obtaining Samples of Liquid and Semisolid Wastes from Containers (Waste Streams PO-001, PO-002, FC-001, and waste oil).**

4.6.1.1. Each waste stream must be sampled. If the waste stream is contained in several containers, a homogeneous sample should be taken. If there are a large number of containers, a subset of containers to be sampled will be chosen randomly by

using a random number table. Any waste stream container which does not have a valid container log or was not secured to prevent unauthorized waste from being placed into the container will require separate sampling.

4.6.1.2. Samples will be taken by inserting a COLIWASA through the bung on each drum, allowing the COLIWASA to fill with the waste, inserting the plug into the end of the COLIWASA, and draining the contents of the COLIWASA into the precleaned glass sample bottle.

4.6.1.3. It is important to keep air out of samples which will be analyzed for both TCLP and non-TCLP volatile organic components. A minimum two 100 milliliter samples should be collected in a Teflon-lined, septum-capped vials and stored and shipped at 4°C prior to analysis. When collecting samples of volatile organics, introduce the materials to the sample vial gently to reduce agitation which might drive off volatile compounds. Liquid samples should be poured into the sample vial without introducing any air bubbles within the bottle as it is being filled. Should bubbling occur as a result of violent pouring, the sample must be poured out and the vial refilled. Each vial should be filled until there is a meniscus over the lip of the vial. The screw top lid with the septum should then be tightened onto the vial. After tightening the lid, the vial should be inverted and tapped to check for air bubbles. If there are any air bubbles present, the sample must be retaken.

4.6.2. Obtaining Samples of Free-Flowing Powders from Containers (Waste Stream AB-001).

4.6.2.1. Each waste stream must be sampled. If the waste stream is contained in several containers, a homogeneous sample should be taken. If there are a large number of containers, a subset of containers to be sampled will be chosen randomly by using a random number table. Any waste stream container which does not have a valid container log or was not secured to prevent unauthorized waste from being placed into the container will require separate sampling.

4.6.2.2. A thief sampler will be used to obtain the sample. The sampler will be inserted into the top of the 55-gallon 17H drum, pushed to the bottom of the drum, rotated several times to allow the sand media and paint chips to flow into the chamber, removed from the drum, and emptied into the precleaned glass sample bottle.

4.6.2.3. Sampling equipment, (e.g., the thief sampler) must be decontaminated by washing in a detergent solution and rinsing before being reused.

4.6.3. Obtaining Samples of Rags from Containers (Waste Stream AC-001).

4.6.3.1. Ideally several samples should be taken from locations dispersed both horizontally and vertically through the open top 55-gallon drums (17H).

4.6.3.2. Sample bottles used for holding samples which will be analyzed for organic compounds should be washed with detergent, rinsed with tap water, rinsed with distilled, deionized water, and dried at 105° C for approximately one hour.

4.6.3.3. The container to be sampled is divided by using an imaginary three-dimensional grid. Each section and level is assigned a number and specific sampling locations are selected by using a random number table. A minimum of four rags should be removed from the randomly selected locations and placed in a precleaned, glass sample bottle with a septum-capped lid.

4.6.4. Each of the high volume waste streams identified in Table 4.1 will be sampled and the samples analyzed each year by December 1 in order to update the hazardous waste profile sheet and to ensure that the initial hazardous waste determinations are accurate and up-to-date. High volume waste streams are defined as those that generate four or more 55-gallon drums of waste per year. All AAFB waste streams are currently classified as high volume.

4.6.4.1. The accumulation site managers will request additional analyses from Bioenvironmental Engineering Services in accordance with this plan whenever the process or operation generating the hazardous waste stream has changed. Prior to turning in a waste to DRMO for disposal, the accumulation site manager must review the current hazardous waste profile sheet to ensure that it still accurately reflects the characteristics, composition, and regulatory classification of the waste. If there has been a change in the waste stream, additional analyses and an updated hazardous waste profile sheet may be required.

4.6.4.2. If new waste streams are generated, the accumulation site manager will contact Bioenvironmental Engineering Services for a determination of the sampling parameters and required analysis. This analysis and a hazardous waste profile sheet will be completed by the accumulation site manager prior to waste turn-in to the DRMO or any other non-DRMO disposal agent. The accumulation site manager must also make arrangements through the Environmental Manager for weighing the waste prior to turn-in.

4.6.4.3. If any newly generated waste is estimated to generate 3 55-gallon drums or less per year, it is considered a low volume waste stream. It will be sampled and analyzed once every three years after the initial analysis and characterization unless there is a process change that would dictate a more frequent analysis. An updated hazardous waste profile sheet must be submitted to the DRMO by December 1 of each year for low volume waste streams, but the reevaluation may be based on process knowledge after the initial analytical characterization.

4.7. Sample Documentation.

4.7.1. Andrews Air Force Bases uses sample labels, analysis request forms, and chain-of-custody forms for all waste sample shipments to ensure the integrity of samples from collection to data reporting. The possession and handling of samples

must be traceable from collection through analysis and final disposition. The documentation of the sample history is called chain-of-custody.

4.7.1.1. The parts of the chain-of-custody process include the use of sample labels which are placed on containers prior to sampling and filled out by Bioenvironmental Engineering Services or accumulation site manager at sample collection. Necessary information on the sample label includes the sample number, name of collector, date and time of collection, and place of collection.

4.7.1.2. A chain-of-custody record should also be filled out and accompany every sample. This record should contain the sample number, signature of collector, date and time of collection, place and address of collection, waste type, signature of persons involved in the chain of custody, and inclusive dates of possession. Bioenvironmental Engineering Services will provide the Chain-of-Custody form.

4.8. Sample Request Procedures. A sample analysis request form should accompany the sample to the laboratory. The field portion of the form is completed by the person collecting the sample and should include pertinent information such as the sample number, the requested analysis, and the name and phone number of the person collecting the sample. The sample analysis request form will typically be provided by the laboratory conducting the analysis. The laboratory portion of the form is then completed by laboratory personnel and includes the name of the person receiving the sample, laboratory sample number, date and time of sample receipt, sample allocation, and analysis to be performed.

4.9. Hazardous Waste Profile Sheet.

4.9.1. After analytical results have been received from the laboratory, the data must be evaluated to determine if the material is a hazardous waste and to ensure compliance with the AAFB waste analysis plan. Bioenvironmental Engineering Services should interpret the results for the waste generator, provide a copy of the results to the waste generator and the Environmental Manager, and keep a copy on file. The file copy should be maintained for at least five years from the date that the waste was last shipped off-installation, because all waste is land disposal restricted waste.

4.9.1.1. The analytical results are used by the accumulation site manager to complete a comprehensive waste stream description which is recorded on the hazardous waste profile sheet. All analytical results from waste evaluation activities should be attached to the hazardous waste profile sheet.

4.9.1.2. A sample hazardous waste profile sheet for waste stream AB-001 is presented in Figure 4.1.

4.9.2. The hazardous waste profile sheet is the standard form which must be used for characterizing hazardous waste for all disposal actions, regardless of whether or not the DRMO in Building 198 is the disposal agent. The hazardous waste profile sheet is available from the local DRMO. If the local DRMO is not the disposal agent, the hazardous waste profile sheet can be obtained from the base Environmental Manager.

4.9.2.1. The DRMO uses the information that is contained on the hazardous waste profile sheet to alert disposal contractors of possible disposal restrictions. The DRMO representative assigns an initial reference number to each hazardous waste profile sheet. Subsequent turn-ins of the same waste do not require that the hazardous waste profile sheet accompany the waste. Instead, the generating activity simply places the reference number in the "Remarks" section (block AA) of the Disposal Turn-In Document (DTID).

4.9.2.2. The accumulation site managers can obtain base support for completing the profile sheet as follows:

- The Environmental Manager (CEV) will advise on completion of Part I and is responsible for completing information required by EPA land disposal restrictions on the hazardous waste profile sheet. The Environmental Manager is also responsible for reviewing the hazardous waste profile sheet for accuracy based on the best available information. Only when the waste has been properly characterized on the hazardous waste profile sheet should the DTID be certified by the Environmental Manager. The Environmental Manager must maintain a copy of each hazardous waste profile sheet in the hazardous waste file for the installation for at least five years from the final date of disposal of the waste stream.
- Base Bioenvironmental Engineering Services (BES) will advise on completion of the health and hazardous waste identification portions of the hazardous waste profile sheet in Part II, Sections 1-4 and the special handling information in Section 5. Bioenvironmental Engineering Services also reviews the hazardous waste profile sheet for technical accuracy when requested by the Environmental Manager. Bioenvironmental Engineering Services should also maintain a copy of each hazardous waste profile sheet in the generating activities' shop folder for five years.
- The Base Transportation Officer will advise on completion of the proper shipping information, containers, and transportation requirements of Part II, Section 5 of the hazardous waste profile sheet.
- The generating activity will submit an updated hazardous waste profile sheet to the disposal agent by 1 December of each year or whenever the waste stream changes regardless of whether the waste stream was analyzed during the past year.

4.10. Waste Analysis Plan Revision.

4.10.1. The AAFB waste analysis plan will be evaluated and reviewed annually by BES to ensure that the most up-to-date procedures are conducted. The plan will also be reviewed and revised whenever:

- sample frequencies change due to annual volume of installation's hazardous waste streams,
- analytical parameters change due to changes in the processes generating hazardous waste,
- EPA hazardous waste numbers and/or UN/NA identification numbers change due to regulatory revisions, and
- disposal methods change due to revisions to land disposal restrictions or changes in disposal contracts.

Figure 4.1. Hazardous Waste Profile Sheet for AAFB Waste Stream AB-001 (Front).

HAZARDOUS WASTE PROFILE SHEET			
PART I			
A. GENERAL INFORMATION			
WASTE PROFILE NO.			
1. GENERATOR NAME Andrews Air Force Base			
2. FACILITY ADDRESS Protective Coating Shop 207 Knox Street Andrews AFB, MD		3. GENERATOR USEPA ID MD9854761032	
5. ZIP CODE 20331-5000		4. GENERATOR STATE ID 34097	
6. TECHNICAL CONTACT Lt Col Mike Newberry		7. TITLE Env Manager	PHONE (301) 981-2348
B. 1 NAME OF WASTE <u>Waste Abrasive Blasting Media with Paint Chips</u>			
2 USEPA or STATE WASTE CODE(S) <u>D007, D008</u>			
3 PROCESS GENERATING WASTE <u>Paint Stripping, AB-001</u>			
4 PROJECTED ANNUAL VOLUME/UNITS <u>20,000 lbs / year</u> 5 MODE OF COLLECTION <u>Drum</u>			
6 IS THIS WASTE IS A DIOXIN LISTED WASTE AS DEFINED IN 40 CFR 261.31 (e.g., F020, F021, F023, F026, F027, OR F028)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
7 IS THIS WASTE RESTRICTED FROM LAND DISPOSAL (40 CFR 268)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
HAS AN EXEMPTION BEEN GRANTED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
DOES THE WASTE MEET APPLICABLE TREATMENT STANDARDS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO REFERENCE STANDARDS <u>40 CFR 268.41</u>			
PART II			
1. MATERIAL CHARACTERIZATION (OPTIONAL-NOT REQUIRED DATA)		4. MATERIAL COMPOSITION	
COLOR <u>Brown</u>		COMPONENT CONCENTRATION RANGE	
DENSITY _____ BTU/LB _____		Chromium 125 mg/l 0.0125 %	
TOTAL SOLIDS _____ ASH CONTENT _____		Lead 360 mg/l 0.036 %	
LAYERING: <input type="checkbox"/> MULTILAYERED <input type="checkbox"/> BILAYERED <input type="checkbox"/> SINGLE PHASE		Non-hazardous 99.95%	
2. RCRA CHARACTERISTICS		blasting beads -- --	
PHYSICAL STATE: <input checked="" type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> SEMI-SOLID			
<input type="checkbox"/> GAS <input type="checkbox"/> OTHER			
TREATMENT GROUP: <input type="checkbox"/> WASTEWATER <input checked="" type="checkbox"/> NON-WASTEWATER		TOTAL _____ 100%	
<input type="checkbox"/> IGNITABLE (D001) <input type="checkbox"/> REACTIVE (D003)		5. SHIPPING INFORMATION	
FLASH POINT (F) _____ <input type="checkbox"/> WATER REACTIVE		DOT HAZARDOUS MATERIAL? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
<input type="checkbox"/> HIGH TOC (> 10%) <input type="checkbox"/> CYANIDE REACTIVE		PROPER SHILLING NAME <u>Hazardous Waste, Solid, 9,</u>	
<input type="checkbox"/> LOW TOC (< 10%) <input type="checkbox"/> SULFIDE REACTIVE		<u>NA 3077, PG III, (chromium, lead), RQ</u>	
<input type="checkbox"/> CORROSIVE (D002) <input type="checkbox"/> TOXICITY CHARACTERISTIC (SEE REVERSE FOR LISTING)		HAZARD CLASS <u>9</u> U.N. or <u>NA 3077</u>	
pH _____ <input type="checkbox"/> CORRODES STEEL		N.A. NO.	
3. CHEMICAL COMPOSITION (ppm or mg/L)		ADDITIONAL DESCRIPTION _____	
COPPER _____ PHENOLICS _____		METHOD OF SHIPMENT <input type="checkbox"/> BULK <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER: _____	
NICKEL _____ TOTAL HALOGENS _____		CERCLA REPORTABLE QUANTITY <u>1 lb</u>	
ZINC _____ VOLATILE ORGANICS _____		EMERGENCY RESPONSE GUIDE PAGE _____	
CHROMIUM-HEX _____ PCBs _____		DOT PUBLICATION 5800.4 PAGE NO. <u>31</u> EDITION (YR) <u>93</u>	
(OTHER) _____		SPECIAL HANDLING INFORMATION _____	
NOTE: EXPLOSIVES, SHOCK SENSITIVE, PYROPHORICS, RADIOACTIVE, AND ETIOLOGICAL WASTE NORMALLY ARE NOT ACCEPTED BY DRMO			
6. GENERATOR CERTIFICATION			
BASIS FOR INFORMATION			
<input checked="" type="checkbox"/> CHEMICAL ANALYSIS (ATTACH TEST RESULTS)			
<input type="checkbox"/> USER KNOWLEDGE (ATTACH SUPPORTING DOCUMENTS - Explain how and why these documents comply with RCRA requirements)			
I, <u>Lt Col Mike Newberry</u> , HEREBY CERTIFY THAT ALL INFORMATION SUBMITTED IN THIS AND ALL ATTACHED DOCUMENTS IS TO THE BEST OF MY KNOWLEDGE AN ACCURATE REPRESENTATION OF THE WASTES TURNED IN TO THE DRMO. ALL KNOWN OR SUSPECTED HAZARDS HAVE BEEN DISCLOSED.			
SIGNATURE OF GENERATOR'S REPRESENTATIVE			DATE 10 March 1994

Figure 4.1. Hazardous Waste Profile Sheet for AAFB Waste Stream AB-001 (Back).

TOXICITY CHARACTERISTIC LIST					
EFFECTIVE: 28 SEP 90 - LARGE QUANTITY GENERATORS 29 MAR 91 - SMALL QUANTITY GENERATORS					
CONTAMINANT	EPA HW No.	(mg/L)	CONTAMINANT	EPA HW No.	(mg/L)
<input type="checkbox"/> ARSENIC	D004	_____	<input type="checkbox"/> HEXACHLORO-1,3,- BUTADIENE	D033	_____
<input type="checkbox"/> BARIUM	D005	_____	<input type="checkbox"/> HEXACHLOROETHANE	D034	_____
<input type="checkbox"/> BENZENE	D018	_____	<input checked="" type="checkbox"/> LEAD	D008	360
<input type="checkbox"/> CADMIUM	D006	_____	<input type="checkbox"/> LINDANE	D013	_____
<input type="checkbox"/> CARBON TETRACHLORIDE	D019	_____	<input type="checkbox"/> MERCURY	D009	_____
<input type="checkbox"/> CHLORDANE	D020	_____	<input type="checkbox"/> METHOXYCHLOR	D014	_____
<input type="checkbox"/> CHLOROBENZENE	D021	_____	<input type="checkbox"/> METHYL ETHYL KETONE	D035	_____
<input type="checkbox"/> CHLOROFORM	D022	_____	<input type="checkbox"/> NITROBENZENE	D036	_____
<input checked="" type="checkbox"/> CHROMIUM	D007	125	<input type="checkbox"/> PENTACHLOROPHENOL	D037	_____
<input type="checkbox"/> O-CREOSOL	D023	_____	<input type="checkbox"/> PYRIDINE	D038	_____
<input type="checkbox"/> M-CREOSOL	D024	_____	<input type="checkbox"/> SELENIUM	D010	_____
<input type="checkbox"/> P-CREOSOL	D025	_____	<input type="checkbox"/> SILVER	D011	_____
<input type="checkbox"/> CRESOL	D026	_____	<input type="checkbox"/> TETRACHLOROETHYLENE	D039	_____
<input type="checkbox"/> 2,4-D	D016	_____	<input type="checkbox"/> TOXOPHENE	D015	_____
<input type="checkbox"/> 1,4-DICHLOROBENZENE	D027	_____	<input type="checkbox"/> TRICHOETHYLENE	D040	_____
<input type="checkbox"/> 1,2-DICHLOROETHANE	D028	_____	<input type="checkbox"/> 2,4,5-TRICHLOROPHENOL	D041	_____
<input type="checkbox"/> 1,1-DICHLOROETHYLENE	D029	_____	<input type="checkbox"/> 2,4,6-TRICHLOROPHENOL	D042	_____
<input type="checkbox"/> 2,4-DINITROTOLUENE	D030	_____	<input type="checkbox"/> 2,4,5-TP (SILVEX)	D017	_____
<input type="checkbox"/> ENDRIN	D012	_____	<input type="checkbox"/> VINYL CHLORIDE	D043	_____
<input type="checkbox"/> HEPTACHLOR (AND ITS HYDROXIDE)	D031	_____			
<input type="checkbox"/> HEXACHLOROBENZENE	D032	_____			

PART III	
FOR DRMO USE ONLY	
DRMO VERIFICATION	
1. DATE VERIFIED _____	
2. RESULTS <input type="checkbox"/> ATTACHED	
pH _____ FLASH POINT _____ SPECIFIC GRAVITY _____ HALIDES (TOX) _____	
REACTIVITY: WATER REACTIVITY _____ CYANIDES _____ SULFIDES _____	
TCLP _____	

Chapter 5

ANDREWS AIR FORCE BASE HAZARDOUS WASTE MANAGEMENT PROCEDURES

5.1. Specific Waste Management Procedures. Hazardous waste is temporarily stored at AAFB at facilities within the following three classifications: initial accumulation points, accumulation sites, and at the permitted storage building. Hazardous waste may only be accumulated and temporarily stored at the pre-designated areas shown in Figure 3.1 or at initial accumulation points located in the same area where the wastes are first accumulated. Each type of accumulation area must comply with the associated requirements outlined below.

5.2. Permitted Storage Facility. DRMO operates a hazardous waste storage facility on AAFB in Building 198. This facility is permitted to store hazardous waste in accordance with permit STD123456789. The permit application should be referenced for specific operating procedures and restrictions.

5.3. Accumulation Site Management.

5.3.1. Each accumulation site must comply with the requirements for siting, physical construction, operations, marking, labeling, inspections, and maintaining a container log.

5.3.1.1. The area used for the accumulation of hazardous waste should be one of the areas specified in Table 3.2. If an additional accumulation site is required, a location shall be selected in coordination with the Base Environmental Manager which minimizes the threat of the waste to human health or the environment in the event of a release of the hazardous waste.

5.3.1.2. AAFB will comply with the following physical requirements for accumulation sites.

5.3.1.2.1. EPA requirements for the location and design of accumulation sites will be met.

5.3.1.2.2. State requirements for the location and design of accumulation sites will be met.

5.3.1.2.3. Accumulation site managers must obtain pre-approval by the Fire Protection Flight, Ground Safety, Bioenvironmental Engineering Services and the Environmental Manager for the location of new accumulation sites. Approval must take into consideration potential environmental consequences if hazardous waste is released from the accumulation site during a spill, release, fire or explosion.

5.3.1.2.4. Containers holding ignitable or reactive wastes must be located at least 15 meters (50 feet) inside the AAFB property boundary.

5.3.1.2.5. The construction of each accumulation site must include an impermeable base or containment system which is capable of preventing environmental contamination due to container overfilling or leaks. Concrete containments shall be treated with a sealant to prevent spills from absorbing into or passing through the concrete. Containers shall not be placed on dirt, sand, gravel, or grass surfaces.

5.3.1.2.6. Containers shall not be located near any floor drains that lead to sanitary or storm water sewers.

5.3.1.2.7. The base of the containment system shall be sloped to a sump so liquids resulting from leaks, spills, or precipitation are drained and removed.

5.3.1.2.8. Different types of hazardous waste must be accumulated in separate containers. Non-hazardous waste must not be mixed with hazardous waste. For example, waste oil, waste paints, and waste abrasive blasting media, etc. should each be accumulated in separate containers.

5.3.1.2.9. For incompatible wastes, segregated containment must be provided by using either separate containment areas or by means of separately diked areas, or sloped containment to separate sumps. Hazardous chemical reactions which cause heat, fire, explosion, pressure, or the evolution of toxic or flammable decomposition products due to incompatible chemical reactions must be prevented. If unsure whether a waste to be disposed of or placed in a container is compatible with the waste in the container itself, contact the Environmental Manager or Bioenvironmental Engineering Services before placing waste in the container. Incompatible wastes, or incompatible wastes and materials must not be placed in the same container. In addition, hazardous waste must not be placed in an unwashed container that previously held an incompatible waste or material.

5.3.1.2.10. Hazardous wastes must not be located near anything with which they are incompatible. For example, lead-acid batteries should not be located near any aluminum structures or surfaces because contact between acid and aluminum may produce flammable hydrogen gas and could lead to a fire or explosion. Containers holding hazardous waste which is incompatible with any other wastes or materials present should be physically separated from the other materials by means of a dike, berm, or wall.

5.3.1.2.11. Containment systems should be designed and operated to prevent run-on into the container area or with enough excess capacity (beyond that needed for the waste) so any run-on will be contained. Spilled or leaked waste and accumulated precipitation must be removed from the system as soon as it is identified to prevent container corrosion or

mixing with wastes. Accumulated precipitation must be checked prior to discharge to ensure that it does not contain hazardous waste or hazardous waste constituents.

5.3.1.2.12. In areas where unauthorized access to the accumulation site by persons not authorized to accumulate waste in the containers is possible, security must be provided by a fence or similar access control device. Post signs that read "Danger - Unauthorized Personnel Keep Out" in English and any other language predominant in the area that can be seen from any access and large enough to be read at 25 feet.

5.3.1.2.13. "No Smoking" signs must be placed conspicuously wherever there is a hazard from ignitable or reactive waste.

5.3.1.2.14. At outdoor accumulation sites, containers shall be protected from direct sunlight and precipitation by means of a roof, tarpaulin, or similar device.

5.3.1.2.15. Indoor accumulation sites shall be well ventilated. Highly volatile organics in particular can present a serious health hazard when in storage. Also, in the event of a spill or leak, effective ventilation should be installed to safely direct toxic or flammable vapors and fumes out of the work area. Care must be taken to prevent exhausted air from reentering work areas through doors, windows, and air intakes on buildings.

5.3.1.2.16. Drums must be placed on pallets to allow for ease of removal when full and to keep them away from accumulated precipitation or spills.

5.3.1.3. Operating Requirements for Accumulation Sites.

5.3.1.3.1. Containers used to store hazardous waste must be kept closed at all times, except for when waste is actually being added to or removed from the container. In general, a container is closed if its original closures, such as bung caps or drum heads, are secured to the container. Therefore, a closed-head 55-gallon drum should have its original (or equivalent replacement) bung caps screwed tightly into the bung openings. During storage, an open-head 55-gallon drum should have its drum head in place with the retaining ring properly secured with the appropriate nut and bolt. Any other types of containers used to store hazardous waste should be kept closed in a similar manner.

5.3.1.3.2. Containers must not be stored or handled in a manner which may cause them to rupture or leak. The following precautions should be taken at both accumulation sites and initial accumulation points to prevent container ruptures and leaks:

- Containers must not be overfilled; fill to 90% of capacity. For example, only fill a 55-gallon drum to 50 gallons. Liquids expand in containers as the temperature increases. A steel drum painted a dark color can easily rise to temperatures above 100 °F and the pressure created by the expansion of the liquid causes bulging heads and damages the integrity of the container. Bulging containers also create a safety hazard for personnel expected to add waste to or handle the containers.
- Containers must be protected from freezing during cold weather. Many materials go through a freeze/thaw cycle during changing weather conditions. This freeze/thaw cycle causes metal stress and can result in leaking containers.
- Containers of ignitable hazardous waste must be grounded. Grounding will prevent build-up of static electricity which may create a spark capable of igniting flammable vapors. When transferring flammable liquids into containers, use a bonding wire to connect the container you are pouring from to the container you are pouring into to prevent sparks caused by the build-up of static electricity during pouring operations. Contact the installation fire department for grounding and bonding instructions.
- Drums and other containers must be handled and transported with equipment designed for the task. Drum grapples attachments may be purchased for tow motors to securely grab and move containers. Secure containers to pallets before moving pallets. Use drum carts designed for the types of containers used by your organization to reduce the likelihood of dropping a container during handling. Never balance drums on the forks of a forklift or tow motor.
- Use a funnel to fill closed head containers. This will ensure that all waste is poured into the container and does not spill on the top of the container. If using a funnel without a locking top, the funnel should be removed and the container closed after filling. If the funnel has any hazardous waste residues remaining, the residues should be rinsed into the container or the funnel placed in a suitable closed hazardous waste accumulation container.
- Drums must not be stacked more than two high. Drums containing flammable liquids should not be stacked.
- Containers should be stored in an area which is well away from or protected from damage due to the movement of vehicles such as trucks, fork lifts, POVs etc.

5.3.1.4. Container marking during waste accumulation, shall consist of the following information:

- The words "HAZARDOUS WASTE";
- Waste description and principal contaminants;
- National Stock Number (if applicable) of predominant waste(s) in the container;
- Organization name, shop code, name of accumulation site manager;
- Accumulation start date; and
- The AAFB-assigned container number.

5.3.1.5. Additional container marking prior to transferring the waste to DRMO or prior to shipping off-base shall consist of the following information required by EPA and DoT. All marks must be durable, in English, and printed on or affixed to the surface of a package or on a label, tag or sign, displayed on a background of sharply contrasting color, unobscured by labels or other attachments and located away from any other marking, such as advertising, that might substantially reduce its visibility or effectiveness. Each container (also referred to as package) shall be marked with the following information.

5.3.1.5.1. Items in paragraph 5.3.1.4 above shall remain on the container.

5.3.1.5.2. The proper shipping name and the corresponding UN or NA identification number must be marked on each package of hazardous waste. The proper shipping name is on the hazardous waste profile sheets. Chapter 3 of the *Air Force Hazardous Waste Management Guide*, AFPAM 32-7043 provides a method for determining the proper shipping name and UN or NA identification number for new hazardous wastes.

5.3.1.5.3. Packages containing hazardous substances (see Chapter 3 of the *Air Force Hazardous Waste Management Guide* for definition) must be marked with the package with the letters "RQ" in association with the proper shipping name. If the proper shipping name does not identify the hazardous substance by name, also mark the package with one of the following:

- The name of the hazardous substance as shown in the Appendix to the Hazardous Materials Table;
- The EPA hazardous waste number; or
- For characteristic hazardous wastes, the word "ignitability," "corrosivity," "reactivity," "toxicity," or the corresponding "D" hazardous waste number.

5.3.1.5.4. When shipping overpacks or other packages with inside packaging containing liquid hazardous wastes, mark the outside package with an arrow symbol indicating "This Way Up."

5.3.1.5.5. Wastes and materials which are a poison inhalation hazard (special provision codes in column 7 of the Hazardous Materials Table of 1 - 6 and 18) must be marked "Poison - Inhalation Hazard".

5.3.1.5.6. The EPA hazard warning must be marked on each container of 110 gallons or less. The EPA hazard warning (preprinted labels can be purchased commercially) contains the wording shown in figure 5.1.

Figure 5.1. EPA Hazardous Waste Mark.

<p>HAZARDOUS WASTE - Federal Law Prohibits Improper Disposal.</p> <p>If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency.</p> <p>Generator's Name and Address: _____</p> <p>Manifest Document Number: _____</p>

5.3.1.6. Containers shall be labeled in accordance with the following requirements prior to transfer to DRMO or prior to shipment off-site.

5.3.1.6.1. DoT hazardous materials warning labels which represent the hazard of the material being shipped must be affixed to containers before being offered for transportation. It is the responsibility of the generating activity to determine whether or not labels are required, any multiple labeling requirements, and the proper location of the labels on the package.

5.3.1.6.2. The following steps should be followed to determine and affix the proper DoT label for hazardous waste shipments in containers, packages, overpacks, or freight containers.

- Locate the hazardous material description as listed in column 2 of the Hazardous Materials Table at 49 CFR 172.101.
- Locate the hazard class (or classes) for the material corresponding to the hazardous materials description in column 3 of the table. Definitions of DoT hazard classes are included in 49 CFR Parts 171-173.
- Locate the hazard label required for each package, as listed in column 6 of the Hazardous Materials Table.
- Place hazard labels on each container next to the proper shipping name marked.

5.3.1.6.3. Some hazardous material descriptions have more than one hazard class listed in the Hazardous Materials Table. A waste may exhibit one or more of these hazard classes. If the container being shipped contains waste exhibiting only one of the hazard classes listed in the table, the appropriate label should be affixed to the container. If the container contains waste meeting the definition of more than one hazard class, multiple labels are required. Multiple labels must be located next to one another

5.3.1.6.4. Combustible liquids in packages do not require labels.

5.3.1.7. All hazardous waste accumulation sites must be inspected at least weekly (AAFB does not routinely accumulate or store hazardous waste in tanks; if tanks are ever used for this purpose, the tanks will be inspected daily). During the inspection, areas where containers are stored must be examined to look for leaking containers and deterioration of containers and deterioration of the area in which the containers are placed. Each inspection must be documented and will

include the name of the inspector, the location of the accumulation site, date, time of the inspection, problems that the inspector should be looking for, and a description of actions taken to correct problems when they are detected. The Environmental Manager will identify the required accumulation site inspection records to be used at AAFB. Inspection records must be maintained by each accumulation site manager for at least three years from the date of each inspection.

5.3.1.7.1. Inspections of hazardous waste accumulation sites are the responsibility of the accumulation site manager; however, the Environmental Manager will periodically verify that inspections are being conducted by auditing the inspection file of each accumulation site manager.

5.3.1.7.2. The Environmental Manager shall also visit each accumulation site at least quarterly to ensure that the containers and the accumulation area are in good condition and are in compliance with all applicable regulatory requirements, which include the following:

- The preparedness and prevention requirements of 40 CFR 265, Subpart C;
- The container requirements of 40 CFR 265, Subpart I;
- The tank systems requirements of 40 CFR 265, Subpart J; and
- The generator pretransportation requirements of 40 CFR 262, Subpart C.

5.3.1.8. Accumulation Site Container Log. To account for all drums at an accumulation site, AAFB accumulation site managers will maintain an accumulation site container log. The accumulation site container log shown in figure 5.2 is used to record a container identification number assigned to the container by the accumulation site manager and the waste stream number of the waste in each container. The following data should be recorded on the log.

5.3.1.8.1. The column "Container Number" represents a unique number assigned to each container. The numbering system should identify the waste stream as well as the individual identity of each container generated by the waste generating activity. For example, code "AB-001-037" references the 37th drum of paint chips generated by the abrasive blasting process.

5.3.1.8.2. The column "Waste Stream" is used to enter a brief description of the hazardous waste in each container.

5.3.1.8.3. The column "Start Date" represents one of the following dates. If waste is being added to a container at an accumulation site, enter the date the first volume of waste was added to the container. If a 55-gallon container is filled at an initial accumulation point and subsequently moved to the accumulation site, enter the date the container was filled to capacity.

5.3.1.8.4. "Date Full" is the date the container was filled to capacity.

5.3.1.8.5. "Date Transferred" is a record of the date the container was transferred to DRMO or was shipped from the accumulation site for treatment, storage or disposal.

5.3.1.8.6. "Shipped To" is a log of the location to which the container was shipped.

5.4. Initial Accumulation Points. An initial accumulation point is an area at or near the point of hazardous waste generation which has fewer requirements than those provided for accumulation sites, provided the following restrictions are met.

5.4.1. Hazardous waste accumulation is under the control of the operator of the process generating the waste.

5.4.2. Not more than 55 gallons of hazardous waste or 1 quart of acute hazardous waste may be accumulated. The 55-gallon limit applies to the total of all the non-acutely hazardous waste accumulated (includes all waste streams combined) at the initial accumulation point.

Figure 5.2. Accumulation Site Container Log.

Accumulation Site Container Log					
Container #	Waste Stream	Start Date	Date Full	Date Transferred	Shipped To
AB-001-037	Sand blasting waste	5 Jul 94	5 Jul 94	1 Oct 94	DRMO
AB-001-038	Sand blasting waste	6 Jul 94	6 Jul 94	1 Oct 94	DRMO
AB-001-039	Sand blasting waste	10 Jul 94	10 Jul 94	1 Oct 94	DRMO
FC-001-143	Contaminated JP-4	8 Aug 94	30 Aug 94	1 Oct 94	Ajax Recycling
PO-002-057	Spent PD 680	9 Aug 94	15 Sep 94	5 Nov 94	DRMO
AC-004-10	Solvent contaminated rags	3 Sep 94	15 Oct 94	5 Nov 94	DRMO

5.4.3. Hazardous waste may be accumulated indefinitely until either of the restrictions in items a or b are exceeded.

5.4.4. Initial accumulation points must comply with the following requirements.

5.4.4.1. Hazardous waste at initial accumulation points must be collected in containers, not tanks.

5.4.4.2. If the 55-gallon limit is exceeded at a initial accumulation point, the container holding the waste must be marked with the date the excess began accumulating. Within three days the waste must be transferred to either an accumulation site or to the permitted hazardous waste storage facility (Building 198). If over 55 gallons of hazardous waste remains at a initial accumulation point beyond this time limit, the initial accumulation point is regulated under the more stringent requirements for accumulation sites.

5.4.4.3. Each initial accumulation point must also comply with the requirements for accumulation sites in paragraph 5.3.1. above.

- Paragraphs 5.3.1.2.4, 5.3.1.2.6, 5.3.1.2.8 through 5.3.1.2.10, and 5.3.1.2.13 through 5.3.1.2.16 regarding the physical requirements for accumulation sites.
- Paragraphs 5.3.1.3.1 through 5.3.1.3.3 regarding operating requirements for accumulation sites.
- Paragraph 5.3.1.4 regarding container marking during accumulation.
- Paragraph 5.3.1.5 regarding container marking prior to turn-in.
- Paragraph 5.3.1.6 regarding container labeling prior to turn-in.

5.5. Hazardous Waste Turn-in to DRMO. After temporary accumulation at the point of generation, most hazardous waste generated at AAFB is transferred to DRMO which operates a permitted storage facility in Building 198. Turn-in of hazardous waste requires three documents; an up-to-date hazardous waste profile sheet, AF Form 2005, and DD Form 1348-1.

5.5.1. All transfers of hazardous waste to the DRMO storage facility must be conducted under the direction of and processed through the Environmental Manager. This procedure will prevent unnecessary waste analyses and handling of the waste. It also provides for an accurate accounting of fund expenditures.

5.5.2. Before turning in hazardous waste, the waste generator should complete an AF Form 2005 (figure 5.3) in cooperation with the Environmental Manager and Base Supply. The Environmental Manager will provide oversight and assistance in completion of the AF Form 2005 and waste turn-in, as follows.

- Assist in determining the EPA hazardous waste number. Bioenvironmental Engineering Services may be consulted for assistance in this determination.
- Identify the cost of disposal and unit of issue (which are used to establish the hazardous waste item record in supply). The disposal price and unit of issue are obtained from the applicable DRMO disposal contract. The unit price represents the cost, per unit of issue, to dispose of the specific waste.
- Inspect the waste and certify that the waste is identified, packed, marked and labeled in accordance with federal and state hazardous waste management or toxic substance control regulations. This certification must be on or accompany the turn-in document (DD Form 1348-1) before it is received by DRMO. If the waste is not properly identified, packed, marked or labeled, it is the responsibility of the generating activity to make appropriate corrections or repackaging, as identified by the environmental function.

Table 5.1. Common Federal Stock Classes.

9150	Petroleum, oils, lubricants	8010	Paints, waste paint related material
6350	Antifreeze, windshield washer fluid	6850	Solvents
5950	Transformers	9999	Spill residue

5.5.3. The specific entries to be completed by the generator on the AF Form 2005 include the following.

- Enter "TIN" in blocks 1-3 to designate a turn-in action.
- Enter the Stock Number in positions 8-22. The Stock Number contains the Federal Stock Class in positions 8-11, the constant "PHW" in positions 12-14, the EPA hazardous waste number in positions 15-18, and the contract line item number (CLIN) in positions 19-22. See Table 5.1 for sample Federal Stock Class designations. Contact Base Supply for other Federal Stock Classes and the appropriate CLIN for each waste generated.
- In blocks 23 and 24, enter the unit of issue of the waste's CLIN.
- In blocks 25-29, enter the quantity of the waste being turned in. This will be the total quantity of the waste being turned in. One drum of the waste would be 00050, if two drums were turned in the quantity would be 00100.
- Enter the Document Number in positions 30-43; it will contain activity code "R," the organization, and shop code of the generating activity, the current Julian date, and the next available serial number taken from a locally devised off-line control register.

- For hazardous waste, enter "H" for the Material Condition Code in position 44.
- Enter the number "9" for the Action Taken Code in position 62.
- The words "Hazardous Waste" should be entered in Block D to readily identify the type of documentation to Base Supply.

5.5.4. The accumulation site manager or designee is required to take the completed AF Form 2005 to Base Supply, who will input the data from the form into the Base Supply computer system and generate a DD Form 1348-1 disposal document (figure 5.4). Copy 1 of AF Form 2005 will be filed in document control after processing and copy 2 will be returned to the generating activity. The DD Form 1348-1 is the document that should accompany the waste for turn-in to the installation hazardous waste storage facility.

5.5.5. The Base Supply representative will sign both copies (original and duplicate) of the DD Form 1348-1 in block W. The words "Hazardous Waste" should be entered on the face of the disposal document by either the Base Supply representative or the hazardous waste generator. The person from the generating activity should then enter the date and time in block 13 and print and sign his or her name in blocks 14 or 15 on both books (original and duplicate) of the disposal document.

5.5.6. Copy 1 and copy 5 of the DD Form 1348-1 disposal document will be retained by Base Supply, who will eventually forward them to Document Control. The remaining copies will be given to the person from the generating activity, who must hand carry the document to the Environmental Manager. The Environmental Manager will record the disposal document number and the cost of disposal on the reverse side of an AF Form 616, *Fund Cite Authorization*, and attach a copy of the DD Form 1348-1 to the AF Form 616. The Environmental Manager will also ensure that the hazardous waste turned in to DRMO for disposal is weighed in the presence of an authorized DoD representative.

5.5.7. The generator should then take the remaining copies of the DD Form 1348-1 to the storage facility (with the hazardous waste). The generator must also ensure that an up-to-date hazardous waste profile sheet is turned in with the waste. The generator retains two copies for base records after acceptance of the waste by the operator of the storage facility. The generator must then return one copy of the disposal document signed by the storage facility operator to the Environmental Manager.

5.5.8. DRMO may require the generator to retain custody of the waste while DRMO administratively manages the off-site disposal or reclamation of the waste. There may be some wastes which may not be accepted by the local DRMO. If DRMO refuses to accept the transfer of accountability of a hazardous waste, the Environmental Manager should be immediately notified to resolve the conflict.

5.6. On-Installation Transportation.

5.6.1. It is important to ensure that any waste transported on-installation is transported in a manner that will not endanger the health of installation personnel or the environment. The activity that generates hazardous waste must ensure that hazardous waste is accumulated and subsequently transported in the proper DoT-specification containers. To determine the proper container to use, refer to the Hazardous Materials Table at 49 CFR 172.101.

Figure 5.3. Sample AF Form 2005, Issue/Turn-In Request.

TRIC		DELDEST		EX		A. INCHECKER, NAME, DATE (TIN)										B. INSPECTOR, NAME-STAMP, DATE (TIN)																													
1 2 3		4 5 6		7		SSgt. Smith, EMS/AGE																																							
T I N						555 9999, 9436																																							
						REQUESTER, TIME & DATE (ISU)																																							
STOCK NUMBER										UNIT OF ISSUE		QUANTITY		C.										DOCUMENT NUMBER																					
NSC										NIIN										ADDN												ACT		ORG		SHOP		DATE		SER. NO.					
8 1 9 1 10 11										12 13 14 15 16 17 18 19 20										21 22		23 24		25 26 27 28 29										30		31 32 33		34 35		36 37 38 39		40 41 42 43		44	
6 8 5 0										P H W D 0 0 1 6 8										5 0		C L 0 0 0 5 0										R		9 1 4		Y D		9 4 3 6		0 0 0 7		H			
PART NUMBER																				E. T.O. REFERENCE/TECHNICAL PUBLICATION OR END-ITEM APPLICATION/NEXT HIGHER ASSEMBLY																									
D. PART NUMBER/MGFR CODE OR NAME/REMARKS																																													
Hazardous waste																																													
WORK ORDER		TELEPHONE		SD		PROJECT		PRI		REQ. DEL. DATE		UJC		MARK FOR										F. T. O. PSC AND/OR ERR																					
SHIP TO		51		51		54		55 56		57 58 59		60 61		CYDHR CODES		DOCUMENT NUMBER										POST/POST																			
45 46 47 48 49 50		52 53												62 63 64		65 66										67 68 69 70 71 72 73 74 75 76 77 78 79 80																			
G. TIME & DATE OF DELIVERY										H. DELIVERY TIME										I.										J. NOMENCLATURE															
																														Waste Naphtha, Petroleum, 3, UN 1255, II															
AF Form 2005, JUN 86										PREVIOUS EDITION WILL BE USED																																			

5.8.1. **Annual Report.** The State requires annual reports from hazardous waste generators and treatment, storage, and disposal facilities by March 1 of each year covering hazardous waste activity over the previous calendar year. Each annual report should include the following information:

- Installation EPA identification number, name, and address;
- The calendar year covered by the report;
- The EPA identification number, name, and address of each off-site treatment, storage, and disposal company in the United States to which hazardous waste was shipped during the reporting year;
- The name and EPA identification number of each transporter used during the reporting year;
- A description, EPA hazardous waste number, DoT hazard class, and quantity of each hazardous waste shipped off-site to a TSDF (listed by TSDF EPA identification number);
- A description of the efforts undertaken during the reporting year to reduce the volume and toxicity of waste generated;
- A description of the changes in volume and toxicity of waste actually achieved during the reporting in comparison to previous years; and
- A certification signed by the Base Commander or authorized representative.

5.8.2. **Emergency Reports.** Releases of hazardous waste, hazardous substances, and hazardous materials onto the land or into the waters of the state must be immediately reported to the State Division of Environmental Management at (555) 555-5291 during business hours or via the State Highway Patrol 24-hour number (800) 555-7935 (in state) after business hours. See the Andrews Air Force Base HAZMAT Plan for additional requirements regarding the reporting of hazardous waste spills, releases, fires, or explosions.

5.8.3. **Incident Report.** In the event that the contingency portion of the HAZMAT Plan is implemented, an incident report must be submitted within 15 days after the incident to the Department of Human Resources Hazardous Waste Branch, as described in AAFB's HAZMAT Plan.

5.8.4. Within 60 days of the completion of final closure of the hazardous waste storage facility (Building 198), the base must submit to the EPA Regional Administrator, by registered mail, a certification that the facility has been closed in accordance with the specifications of the approved closure plan. The certification must be signed by the facility operator and an independent registered professional engineer.

5.8.5. If requested by EPA or otherwise required by regulatory requirements, the installation must submit reports pursuant to 40 CFR 264 (or 265, as appropriate) Subparts F and K through N.

Table 5.2. RCRA Records and Corresponding Minimum Retention Periods.		
Record or File	Retention Time	Citation
Hazardous waste determination documentation	5 years from the date that the waste was last sent to a treatment, storage, or disposal facility†	40 CFR 268.7(a)(7)
Annual report	3 years from the due date of the report†	40 CFR 262.41
Hazardous waste manifest	5 years from the day the waste was accepted by the initial transporter†	40 CFR 262.20
Accumulation site inspection logs	3 years from the date the inspection was conducted†	40 CFR 262.34 40 CFR 265.15(d) 40 CFR 265.174
Exception reports	3 years from the due date of the report†	40 CFR 262.42
Land disposal restriction notice & certification	5 years from the date the waste was last sent to a TSDF†	40 CFR 268.7
Notification of intent to export waste	3 years from the date the hazardous waste was accepted by the initial transporter†	40 CFR 262.53
EPA acknowledgement of consent (for exports)	3 years from the date the hazardous waste was accepted by the initial transporter†	40 CFR 262.51 40 CFR 262.53
Waste export confirmation of delivery	3 years from the date the hazardous waste was accepted by the initial transporter†	40 CFR 262.54
Annual report (required of primary exporters of hazardous waste)	3 years from the date the hazardous waste was accepted by the initial transporter†	40 CFR 262.56
Employee training records	Current personnel: until closure of facility; former personnel: 3 years from date the individual last worked at facility	40 CFR 262.34 40 CFR 265.16
† The periods of retention are extended automatically during the course of any unresolved enforcement action or as requested by EPA.		

Chapter 6

TRAINING

Section A--Hazardous Waste Training Requirements.

6.1. Personnel for Which Training is Mandatory.

6.1.1. Hazardous waste management training is required for personnel who handle hazardous waste at facilities which fit into any of the following categories:

- permitted hazardous waste storage facility (Building 198);
- hazardous waste accumulation sites; or
- emergency response organizations which may respond to hazardous waste incidents.

6.1.2. In addition to personnel identified in item a above, all AAFB personnel who perform any of the following tasks must receive hazardous waste training:

- decide which wastes are hazardous waste;
- add hazardous waste into accumulation containers or tanks at accumulation sites;
- remove hazardous waste from accumulation tanks or containers;
- transport hazardous waste to or from accumulation sites;
- transport hazardous waste to or from storage and treatment units;
- respond to spills, fires, or explosions, involving hazardous waste;
- complete hazardous waste manifests, annual reports, or exception reports;
- inspect hazardous waste accumulation sites, storage, treatment, or disposal facilities;
- operate accumulation sites;
- work at permitted or interim status TSDF; or
- conduct any tasks involving occupational exposure to or which require management of hazardous waste.

6.2. Training Frequency. The required training must be successfully completed by all of the personnel described above. For new personnel, training must be successfully completed prior to their assignment to a positioning involving the handling or management of hazardous waste. Until that time, untrained personnel must not perform any tasks involving hazardous waste management unless they are supervised by trained personnel. Facility personnel identified in section 6-1 must take part in an annual review of the training program.

Section B--Training Scope.

6.3. Training Components. There are two general components to the training required by RCRA in 40 CFR 265.16. Personnel must be trained: 1) how to perform their duties in a way that ensures AAFB compliance with hazardous waste regulations; 2) hazardous waste management procedures, including contingency plan implementation; and 3) how to respond to emergencies involving hazardous waste.

6.4. Air Force Hazardous Waste Management Training Program. AAFB uses the Air Force Hazardous Waste Training Program to train applicable base personnel. The Air Force has developed a slide presentation and a computer-based training (CBT) program to help meet Federal hazardous waste training requirements. The programs are geared to flightline, maintenance, and other AF personnel who generate and transport hazardous waste. To fully comply with all regulations, both programs must be tailored to meet each installation's specific requirements. AAFB's specific procedures for waste determination, accumulation, transportation, and turn-in, must be incorporated into the training program, along with the emergency response procedures. All hazardous waste training must include the most current Federal, State, and local requirements. Each training course offering must be customized to fit the specific hazardous waste management requirements of the attendees. Arrange training for similar activities at the same time. For example, present one course offering for installation activities that generate hazardous waste as a result of painting operations (i.e., the CE paint shop, aircraft painting operations, missile maintenance, etc.), another offering for activities that generate hazardous waste from cleaning and degreasing operations (i.e., transportation, aircraft maintenance, etc.), and another for operators of the hazardous waste storage facility.

6.5. Required Records. Training records are required to document that all appropriate personnel have successfully completed their required training. The following records should be maintained by the Environmental Manager.

- The job title for each position at the installation related to hazardous waste management and the name of the employee filling each job.
- A written job description for each position related to hazardous waste management. For the purposes of RCRA training records, the job description need only describe the job as it relates to the management of hazardous waste and must include the requisite skills, education, or other qualifications, and the duties of facility personnel assigned to each position.
- A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position related to management of hazardous waste.
- Records that document that the training or job experience required to meet the training requirements have been provided to and completed by base personnel. These records must be kept for current employees as long as they work at the installation, and for an additional three years after the date they leave the base (or stop working at a position related to hazardous waste management). Training records may accompany personnel transferred to another installation.

Chapter 7

RESPONSE TO EMERGENCIES

7.1. Emergency Response Procedures and Contingency Plan Requirements. AAFB has written emergency response procedures for hazardous waste generating activities and for the hazardous waste storage facility. The required emergency response and contingency plan requirements have been incorporated into the AAFB Hazardous Materials Emergency Planning and Response Plan, called the HAZMAT Plan. The HAZMAT Plan is distributed to all base activities that generate hazardous waste. Emergency response activities relating to hazardous waste spills, fires, or explosions involving hazardous waste shall be in accordance with the HAZMAT Plan.

7.2. Implementation. The AAFB HAZMAT Plan must be implemented whenever there is a spill, fire, explosion or release of hazardous wastes. All incidents involving hazardous waste or hazardous substance spills or releases must also be immediately reported to the AAFB Fire Department at 911. All incidents off-base involving hazardous waste generated at AAFB must be immediately reported to the local emergency reporting number, then reported to the Consolidated Command Post at (555) 555-3121.

Chapter 8

POLLUTION PREVENTION

8.1. Pollution Prevention Program Plan. Andrews Air Force Base has prepared a Pollution Prevention Program Plan (P3P) in order to protect and enhance the environment and reduce occupational safety and health risks to AAFB personnel. The P3P is maintained by the Environmental Manager as a stand-alone plan.

8.2. Scope of the P3P.

8.2.1. The P3P supports the concept of reducing AAFB's use of hazardous and toxic substances and the generation of wastes through source reduction and environmentally sound recycling. According to the P3P, generation of hazardous substances, pollutants, or contaminants will be reduced or eliminated at the source; pollution that cannot be prevented at the source will be recycled in an environmentally safe manner; pollution that cannot be recycled will be treated in an environmentally safe manner; and disposal or other releases to the environment will be employed only as a last resort and will be conducted in an environmentally safe manner.

8.2.2. The P3P covers not only hazardous waste minimization, but also includes the following topics:

- Industrial maintenance and clean-up operations involving hazardous and other wastes
- Municipal solid waste
- Non-point source pollution
- Material procurement, supply, and distribution
- Education and incentives
- Systems acquisition
- Allied programs associated with pollution prevention including comprehensive planning, energy and transportation efficiency, and natural resources value.